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AUTHOR	d'Agostino, Micheline; Masse-Raimbault, Anne-Marie
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ABSTRACT

Providing basic reference materials, this issue of "Children in the Tropics" consists of a revised and completed version of the 1982 issue on the development of children from birth to 6 years of age. Contents present a broad picture of the physical and mental development of children under 6 and formulate a number of recommendations about how to provide help and support for such children. Section I concerns child development. Section II discusses the education of young children in terms of child development and play, the child and the development of communication, and the child and expression. Section III focuses on health monitoring and education for young children, exploring different types of caretaking for young children, education for parents, and the educational program approach to learning. Section IV indicates some landmarks for the monitoring of child development which are based on experiences in Colombia. Provided are guidelines for monitoring the development of children under 6, a growth chart, and a pediatric grid for sensory assessment. Concluding materials include technical notes on the observation of young children and guidelines for building a short-term learning program. Supplementing the discussion are examples, technical notes, diagrams, and drawings which are intended as practical tools for specialists. (RH)

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in the TROPICS

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The International Children's Centre was created by the French government in 1949, on the initiative of Professor Robert Debré in particular, following negotiations between France and the United Nations. Its purpose was to furnish those international and national agencies dealing specifically with child care with training facilities and educational and informational tools in the field of child health and development, viewing children within their family and surroundings.

ICC soon turned essentially toward Third World children and devoted its activities to the training and education of personnel with social, educational and administrative responsibilities as well as medical and paramedical workers. The desire for greater efficiency has led it to work increasingly with trainers and to concentrate its efforts on the methodological and educational aspects of mother and child care programmes.

ICC is also engaged in an attempt to further study — and — action on some aspects of the life and health of children and their family, so as to contribute to practical improvement, particularly in the fields of growth, nutrition, planned parenthood, the control of transmissible and nutritional diseases, preschool and school education, the needs of disabled and underprivileged children, etc.

Over this period of more than 30 years, a large amount of documents on children and adolescents, mostly from the developing countries, has been accumulated. This international documentation has been classified and sorted out, and has been computerized since 1983 : a bibliographic data base (BIRD : "Base d'Informations Robert Debré") may be consulted anywhere in the world, through international communications networks. ICC also publishes periodicals, educational documents and specialized bibliographic bulletins.

As for its legal status, the International Children's Centre is a foundation under french law of recognized public utility, administered by an executive board with broad international membership.

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Bois de Boulogne
75016 Paris

CONTENTS

PROCEED WITH CAUTION... CHILDREN UNDER SIX

M. d'AGOSTINO (1) - A.M. MASSE-RAIMBAULT (2)

EDITORIAL ..... Claude JOLIF 4

I. TOTAL CHILD DEVELOPMENT 6

- Introduction 6
1. Total development 10
2. The growing child 12
3. Learning about oneself, others and the environment 15
4. Living conditions shape the child's development 16
5. The child on the road to development: some landmarks 21
6. Some obstacles on the road 25
7. Promoting harmonious development: recommendations 29

II. EDUCATION FOR YOUNG CHILDREN 32

1. Child development and play 32
   - A. The sensori-motor form of play 33
     - a. Play in children under 2 34
     - b. Play in 2 to 6 year-olds 36
   - B. The symbolic form of play 48
   - C. Some suggestions for play 54
2. The child and the development of communication 66
   - A. The first modes of communication 66
   - B. Spoken language 67
     - a. The prelinguistic phase 68
     - b. The linguistic phase 69
     - c. Some educational techniques 74
   - C. Written language 76
     - a. Gaining access to written language 77
     - b. Educational action 82
     - c. Activities and abilities to be encouraged and developed 82
   - D. Choosing pictures and books for young children 87

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(1) Teaching consultant - Preschool education - ICC.
(2) Public Health Physician - ICC.

Translated from French to English by Helen ARNOLD.

3. The child and expression ... 91
A. What is expression? ... 91
B. The evolution of expression: its different types ... 92
C. Conditions for expression ... 93

III. HEALTH MONITORING AND EDUCATION FOR YOUNG CHILDREN ... 97

1. Different types of caretaking for young children ... 97
A. Crèches ... 98
B. Day care centres, kindergartens and nursery schools ... 100
C. Specialized child-minding structures ... 102
2. Education for parents ... 103
A. The need for educating parents ... 103
B. Contents of parent education ... 104
C. Who should receive parent education? ... 105
D. Forms of education for parents ... 106
E. Some examples of education for parents ... 107
3. An approach to learning: the conception of educational programmes ... 108
A. An approach to learning ... 108
B. Basic needs and spheres requiring stimulation ... 109
C. An example of a learning programme ... 110
D. Evaluation of the learning programme ... 113

IV. SOME LANDMARKS FOR THE MONITORING OF CHILD DEVELOPMENT: OUR EXPERIENCE IN COLOMBIA by H. GENSINI and M.J. GAVITO ... 115

1. Monitoring of development in children under six ... 115
A. Spheres of development ... 115
B. Indicators ... 118
C. Presentation ... 118
D. How to use them ... 119
E. Who uses them? ... 120
2. The growth chart ... 120
3. A paediatric grid for sensory assessment ... 124
A. The assessment grid ... 125
B. Assessment of eyesight ... 125
C. Assessment of colour vision ... 128
D. Assessment of pronunciation ... 129
4. General remarks ... 129

CONCLUSION ... 131

Technical notes: The observation of young children ... 132
How to build a short-term programme ... 137

EDITORIAL

by Claude Jolif

Issue after issue, "Children in the Tropics" carries on its inventory and discussion of the numerous questions encountered by all those who, for one reason or another, have a share in the responsibility for helping children in the developing countries to achieve the full expression of their physical and mental potential. For each theme, the articles selected are as accurate and up-to-date as possible, while an attempt is made to avoid the use of an overly technical, specialized language. The results of our efforts will be judged by our readers: their suggestions and criticism, as well as their encouragements are always welcome. But even more so, we are eager to receive any papers telling of their own or other people's concrete experience in any of the fields of our shared interests, and which may be published.

While the sum total of the themes dealt with in CIT covers a very broad range, each issue generally covers a limited, well-defined topic in some cases, a review of our knowledge about an ailment or a disability and its prevention and treatment (xerophthalmia and blindness of nutritional origin, motor disabilities, etc.), in others an outline of a strategy for prevention in a relatively broad domain (immunization, prevention in obstetrics, weaning foods, etc.), or again, an overall presentation of a number of complex phenomena characteristic of a major aspect of children's lives (early mother-child interaction, biological rhythms, etc.).

Occasionally, CIT feels the need to present an even more comprehensive discussion of the question of child development. Such an attempt was made by Anne-Marie Masse-Raimbault and Micheline d'Agostino in 1982 (n° 135-136-137), under the title "Small children: their initiation to life".

Our experience in the past five years has shown us that while their work was in no way definitive, it remains a valuable basic reference for all those who attempt to situate their own action within the general context of the overall evolution of young children, so as to respect its specificity in a world too exclusively devoted to the interests and needs of adults. For this reason, we have decided to print this carefully revised and completed version of the 1982 issue.

The authors present a broad picture of the physical and mental development of children under six, viewed within their social context, and formulate a number of recommendations as to how to provide help and support for children in their own personal development. Emphasis is placed on three to six year-olds, a group which receives less attention from official agencies than do infants.

Our intention is not to summarize a piece of work which cannot be reduced to a few simplified ideas. Some major guidelines may be defined, however:

— child growth and development are complex phenomena involving some elements specific to each individual, the physical environment with its contributions and stimulations, and the mental and emotional influence of other people. The process is not simply an accumulative one: there is a dynamic interaction between these different factors, within a social context which is itself often experiencing rapid change, as is the case of the accelerated urban growth in many third world countries;

— for young children, socialization requires communication, and more specifically the learning of spoken, then of written language. A proper balance must be found between the spontaneousness of invention and judicious accompanying action by the social group;

— it is up to adults to help children to develop their personality and their potentialities fully. This implies that they themselves are capable of differentiating between their own conceptions and what is objectively in the child's interest; whence the difficulty and the necessity of adequate parent education, which should be implemented by the community and by local associations, no less than by institutional structures.

— play provides an excellent illustration of the above-mentioned notions. Far from being futile, it is one of the child's main ways of apprehending reality and shaping his/her personality. It is up to adults to encourage it and to set limits to it, while respecting the child's initiative and freedom;

— in the last analysis, health and education are clearly two complementary approaches to what is more or less a single reality, and the two should be combined whenever possible, through interprofessional action.

These are some of the key ideas which are spelled out in the present issue, along with examples, technical notes, diagrams and drawings aimed at providing practical tools, to be adjusted to each situation. There are few basic changes, with respect to the 1982 text; one new orientation is the increasing attention paid to the informal structures set up by parents, communities and various other types of groups.

The reader should not expect to find any peremptory assertions or ready-made solutions. Our ambition, which is in itself quite substantial, is to provide a framework for thought as well as a practical guide in a field where all truths may be seen to be relative and temporary. As a general rule, it is more in the nature of the International Children's Centre to assert its convictions than to profess truths.

Claude JOLIF
Director of the ICC

I. TOTAL CHILD DEVELOPMENT

INTRODUCTION

The first six years of life are extremely important for children's future. Their physical growth and psychomotor and cognitive development are very rapid during these years. Although their evolution is uninterrupted, two main phases may be identified, characterized by a series of health, nutritional, educational, social and emotional needs whose respective weight and degree of priority vary with time.

The first phase, from birth to age 2 or 3, is marked by a state of dependency and great vulnerability, linked to immaturity, particularly where communicable diseases and nutrition are concerned. It is relatively well known. Many programmes have been set up for this age group, and have met with varying success.

The second phase, from age 2-3 to age 5-6, marked by gradually increasing autonomy and socialization, is not often studied in itself, and is not seen as a priority for national policy. While some programmes specially aimed as this age group do exist, they only cover a very small percentage of children. The activities offered are either expensive, more or less appropriate and reserved for the more privileged classes, or closely related to school (reading, writing) whereas these children are not yet capable of assimilating them, or again, they may simply be disguised forms of baby-sitting, with its attendant disadvantages.

During this second period, children acquire skills and learning, build the foundations of their knowledge and thought processes, discover the ethics of their environment and develop their personality. These steps are all extremely important for their later life, but they require that children be given backing, love, stimulation and support, and that individualized, well-planned programmes be set up for them by concerned parents, communities or official agencies.

The population of developing countries is quite young, and children under 5 representent 16 to 25% of the total population (8.5% in Europe). They constitute a particularly vulnerable group: often they alone represent 40 to 50% of all deaths. In some regions, for 100 newborns, 30 to 40 die before reaching the age of 5. Often little is known of the condition of 1 to 4 year-olds: for demographers, they do not represent a homogeneous age group, and their number is often calculated by approximation. Their mortality rate, in the

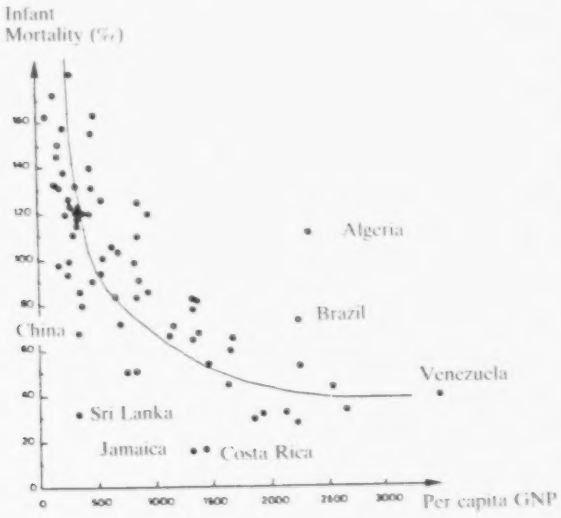
developing countries, is still as high as 20 to 30 per 1,000, a figure which is 30 to 45 times as high as in the industrialized countries. Children under 5 are particularly vulnerable both because of their extremely rapid growth and their immaturity, which make them very fragile, and because they often live is an aggressive environment.

It is our wish to open some avenues for thought, so as to see how educational and social health facets may be included in programmes so as to favour the overall, harmonious development of children, rather than any single one of these facets.

The health status of children under 5 is determined by reference to some indicators such as the infant mortality rate (children under one) or the child mortality rate (1 to 4 year-olds).

For many years it was believed that a drop in the infant mortality rates could only be achieved by increasing income substantially.

H. BEHM-ROSES and E. AKOTO (1) have proved that economic growth is not a necessary prerequisite for a low infant mortality rate. This rate is 3 to 6 times lower in Sri Lanka and China than in some African countries with the same per capita GNP. The infant mortality rates in Costa Rica, Cuba and Jamaica are similar to those observed in Europe, despite a much lower per capita GNP.



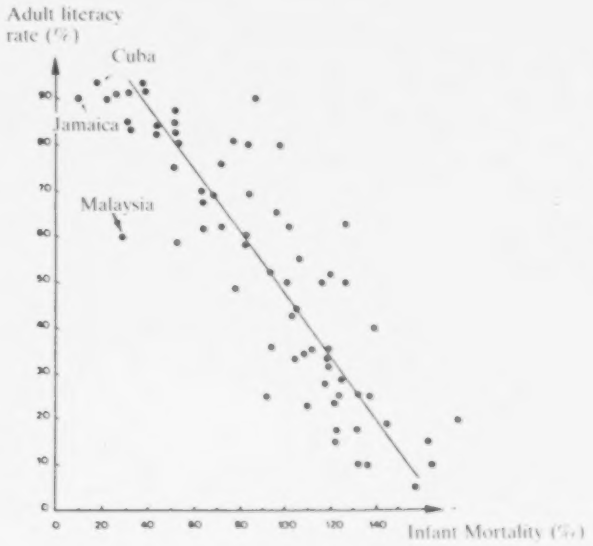
Infant mortality as related to gross national product per capita (per capita GNP) in 1982*

(1) "Santé et mortalité aux jeunes âges dans les pays en voie de développement". Annales de la Société belge de médecine tropicale. 1987, 67.

* Taken from "Santé et mortalité aux jeunes âges dans les pays en voie de développement"

In a publication on "Intersectoral action for health in South-East Asia Region" (1987), WHO cites the example of Sri Lanka, China and the state of Kerala in India, where mortality has been reduced and the health status of relatively poor families with an income of less than 350 US$ has been improved. Sri Lanka has an infant mortality rate of about 30‰ and an average life expectancy of 67 years; both figures are much higher than those encountered in some countries with much higher incomes.

In the past two decades, various studies have shown the important role played by the adult educational level in improving health; one particularly good example of this is planned parenthood programmes. The figure shown below indicates that no country with a low literacy level (under 70%) has achieved an infant mortality rate under 60‰.



Infant mortality as related to adult literacy towards 1982[1]

The analysis of these development strategies is extremely interesting, and shows that health was improved despite relative poverty, thanks to programmes in which education was given priority - schooling, including basic knowledge for coping with health problems and more particularly "knowledge that helps women to deal with the problems of mothering and child care" - along with improvements in diet, housing, sanitation and transportation.

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[1] Taken from "Santé et mortalité aux jeunes âges dans les pays en voie de développement".

Infant mortality is not a very reliable indicator, however, both because civil status records are often erroneous and because they do not furnish any information about the children's health status. Child mortality - that is, deaths among 1 to 4 year-olds - is more representative, since it is very sensitive to living conditions, but it is rarely studied.

The measurement of health by negative indicators such as mortality rates is still far too frequent: we consider that the question is not mortality but children's health and well-being, and their place in society.

The infant mortality rate is still one of the only indicators used by many population experts, international or governmental agencies when they class countries, and determine priorities for the financing of programmes. A drop in mortality does not necessarily correspond to progress in health: more information is needed about the health and development of those who are alive, as well as their evolution and needs. Furthermore, studies usually deal with the national situation, whereas great differences may be seen within a same country, between rural and urban areas, for instance, with pockets of poverty within some groups, and discrepancies between social groups, and between men and women.

A better analysis of the causes of mortality is required, but should be completed by an understanding of the mechanisms and circumstances through which harmonious development has been achieved. Why, within underprivileged groups, are some families, including the children, in better health?

Children aged 2-3 to 5 form a group which has often been overlooked, despite its substantial size and great vulnerability. Not much research has been done on their health status, their mode of living, their place within the family, their specific needs, and once they have learned to walk, been weaned and vaccinated, and have overcome the common childhood diseases, few actions are undertaken in the field of health and few educational programmes are designed for these children and their parents.

Parents and officials have a decisive role to play in helping children build basic experiences, learn what they need to learn for later life, discover their code of ethics, consolidate their health and acquire behaviour and attitudes which will enable them to assimilate their family's culture and be impregnated with it and simultaneously, be capable of adjustment to change. Programmes aimed at children should enrich their surroundings and enable them to experience situations which do not conflict with their traditional values. They would combine health, emotional, socio-cultural and educational elements, thus providing children with the best possible chance of achieving harmonious total development. Such programmes might be conducted either in homes or within structures set up by the community or the government; they should give priority to the highest risk groups.

The establishment of a strategy for promoting harmonious child development requires:

— knowledge of the biological, health, psychomotor and socio-cultural aspects of this development within different settings;

— the selection, by an interdisciplinary team, of top priority guidelines for action, in accordance with available resources, and their translation into concrete programmes.

What follows is an attempt to do just that.

1. TOTAL DEVELOPMENT

What is total child development? Children are constantly evolving creatures, from fertilization of the ovum to adulthood.

The word development designates all of the dynamic phenomena that participate in the gradual transformation of the human being from conception to adulthood. It may be divided into physical development and mental development.

- Physical development is the result of a combination of the body's growth and its maturation. Growth is a quantitative occurrence, essentially caused by an increase in the number of cells (cell multiplication) and to a lesser extent, to an increase in their size. It is evidenced by an increase in children's weight, height and volume. Along with this quantitative phenomenon, a maturation process takes place: cells are modified, structured, perfected, and they acquire a specific function, through which maturity (adulthood) is attained. The quantitative and qualitative aspects are concomitant.

- Mental development involves the motor, sensory, cognitive, social and emotional domains, which are so closely interrelated that they cannot be separated.

The total development of the child is **a unique process.** There is a general outline of development common to all children, but differences in character, physical ability, environment and pervading family atmosphere explain why, at the same age, perfectly normal children can be quite different. Every child has his own rhythm of development. Walking at eleven months is no more normal than walking at sixteen or eighteen months. A child whose initial progress is very rapid may level off his pace and be overtaken by the one that seemed "behind" several months earlier.

The development is **a continuing process:** each stage prepares the way for the following. The stages are essentially convenient points of reference and their delimitations often indistinct. Some are more significant and open completely new possibilities, such as learning to walk alone. As for language, it is acquired in a slow and gradual process, from the first words whose meaning is assigned by the interpretation given by the child's entourage, to the fairly complex sentence of the four-year-old.

The development is also **a total process.** The child grows, matures physically, and at the same time he develops intellectually, socially and emotionally. These different changes overlap and interact with each other and are subject to common influences. It is just as important for development to be harmonious in all its aspects as that a particular achievement be acquired or so many centimeters reached at a given age. It is not a matter of the child running an obstacle course as fast as possible but that his body and mind should mature and expand in a well-balanced manner, in all fields.

Within this overall process, each child is unique. Despite the unique, ongoing nature of the development process, a theoretical analysis can single out a succession of chronological

periods, with specific features for some stages. Each stage is the result of adjustment to a new situation rather than the simple outcome of a biological or psychological phase. The course followed during each stage is influenced by the previous one and conditions future stages.

During the **prenatal stage,** the embryonic and foetal phases are characterized by extremely active cell multiplication. Each organ, including the brain, is structured and grows at a very rapid pace; in fact, the fastest pace in all life. This is therefore a period of great vulnerability: as we know, rapid growth is correlated with high risk periods and fragile organisms. Fortunately, the child is protected by the mother's body during its intrauterine life.

The **perinatal stage** includes the end of gestation and birth. This is the period of adjustment to breathing air.

"Infancy" is characterized by rapid growth and an existence dependent upon those around the infant and influenced by the surroundings. It is comprised between birth and about age one. The overall system of defense against infections is developed.

The **early childhood stage** is one of learning in all fields, and of socialization. We will mostly discuss this age group.

The **late childhood stage** or school age, goes from age 5-6 to 12-14, and is followed by **adolescence.** Puberty occurs then, with important changes in height, body structure and mental and sexual life. The length of this period of adjustment to adulthood varies from one culture to another.

Growth is of course a genetically ordered phenomenon, but much research has demonstrated the importance of the role played by the environment, including the family atmosphere, the amount of affection and feeling of security, parental education, housing, hygiene, nutrition, economic resources, health status, etc.

The classification suggested above is the one used by physicians and health officials. It corresponds to children's biological development, and has led to the establishment of specific programmes: prenatal consultations for the monitoring of the child's development and the mother's health, and to prepare her for childbirth, maternal and child health care, aimed at providing routine monitoring of mothers during the immediate postnatal period, as well as of infants. In fact, such monitoring should be pursued for two to three years, but is often interrupted much earlier when it exists in the first place. Despite considerable efforts, many countries are faced with the following situation: mothers do not have their children's health checked when they are not sick. There is little motivation for this task among health workers, and surveillance coverage is very low. Many officials have attempted to solve this problem through the creation of new structures such as basic health centres or primary health care, but the results are not very encouraging, and the difficulties remain present.

"Normal" child development should meet certain general standards:

— be located around an average value, between the distributive limits which, at each age, mark off the majority of the reference population (generally 95% for physical development indicators); the indicator is any quantifiable datum (example: weight, height, etc.) which can best serve to measure the life conditions of a population group and trace their modifications ;

— have a rhythm, evolution, and rate of progress also located around an average;

— finally, be harmonious. There should not be discrepancies between the different areas of development, for example, ratio of weight to size or psychological development to motor development.

2. THE GROWING CHILD

A - Weight

Weight is a highly sensitive indicator, but is not specific to growth. Incidents such as diarrhoea or fever may disturb it and cause variations. It reflects the child's current condition. Weight variations are rapid and significant. Weight measurement is by far the most common and best known method of supervision. Weight is an excellent indicator of the child's health and nutrition status. The greatest amount of information is obtained not from weight at a given moment but how it changes over a period of time, the variation between two successive weighings. Chubbiness, however, is not necessarily a sign of health; a child with good muscular development is in better shape than a fat, flabby baby.

The weight curve is a useful base.

— in detecting malnutrition long before appearance of other clinical signs;

— in managing and evaluating the gravity of dehydration states;

— in a whole series of preventive and educational activities within the health sphere: dietetic counselling and advice on food supplements — education — parental participation (using the weight curve to explain the child's health status and measures to be taken — evaluating the nutritional situation and/or effectiveness of preventive measures on an individual or collective level (community health indicators).

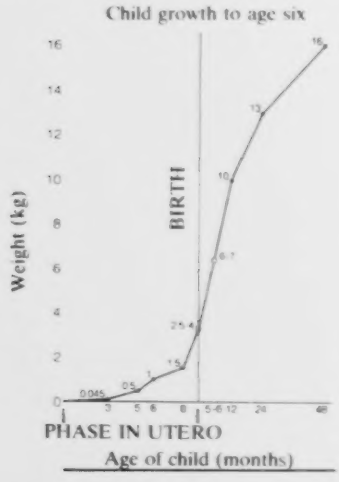
B - Height

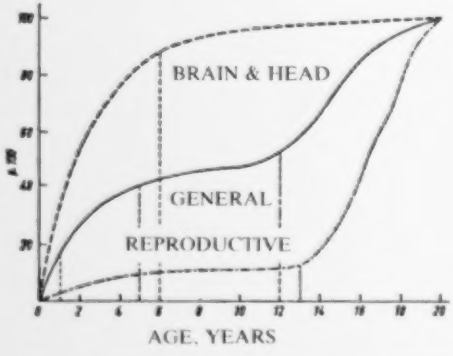
Height is a very reliable measure of the growth phenomenon. The child's height curve is an excellent record of previous development and graphic evidence of his entire growth history. Actually, there is a certain delay between a state of malnutrition and its consequences on the child's body length. Slowed statural growth indicates that malnutrition began at least two or three months ago. As opposed to weight, which is subject to rapid and radical variation, height is a very stable measurement which cannot decrease. It is, however, more difficult to measure than weight. Children under two must be measured prone, which calls for the aid of a second person.

The following tables illustrate the rapidity of growth during pregnancy and the early years of life. At about age 6, the child's overall weight is about 40% of his/her adult weight, whereas the brain already weighs 90% of its final weight. The reproductive organs gain most of their weight during the pubertal period.

	WEIGHT (kg)	HEIGHT (cm)	HEAD CIR-CUMFERENCE (cm)	WEIGHT OF BRAIN (g)
GESTATION				
3rd month	0.0450			
5th month	0.500			
6th month	1	35		
8th month	1.500			
BIRTH	3.250	50	35	325
5-6 months	6.5 (BW × 2)			600
12 months	10 (BW × 3)	70-72	47	900
24 months	13 (BW × 4)	82-84	49.5	1 000
48 months	16	100 (BH × 2)		1 300
6 years	20	113	54.5	

Progression of weight, height, head circumference and weight of brain from birth to age 6 years.
BW: Birth Weight BH: Birth Height





Growth curves of different parts and tissues of the body (from SCAMMON, 1930 and TANNER, 1962)

Source : Children in the Tropics N° 138-139-140, International Children's Centre, Paris, 1982.

C - Brain development

The brain grows with maximal rapidity extremely early in the child's life, before birth. Brain volume can be estimated by head circumference measurement. It averages 35 cm at birth. At one year it is about 47 cm. During the second year, the increase does not exceed 2 to 3 cm. At about age six, head circumference reaches 54-55 cm.

The essential phase of brain growth takes place between the last part of gestation and the first months of life. Actually, brain weight averages 335 g at birth, jumps to 925 g by 1 year, and has attained 90% of its final volume at about 6 years. During the last three months of gestation, the brain gains 3 grammes per day, and during the first 6 months of life it takes on another 2 grammes each day, whereas its growth is reduced to 0.35 grammes a day between the ages of 6 months and 3 years.

Noble cell (neurone) multiplication is probably finished by birth or within the first months thereafter. During the first years, connective tissue growth continues as well as rapid maturation of cell bodies and of the processes that conduct nerve impulses. When a brain cell dies it is not replaced. Moreover, each cell is formed at a well-determined moment and in case of impediment, no recuperation is possible. It can be stated that the period of maximal biological vulnerability of the human brain is the prenatal period and the first few months; next, the first years of life.

The human brain is almost complete at one year, but its functions are not regulated and its possibilities depend greatly on how they are stimulated and used.

D - Soft tissue growth

Soft tissue growth can be estimated by measuring arm circumference. Between one and two years, normal perimeter is somewhere around 14 to 16 cm.

This measurement is most valuable as a gauge of muscle tissue volume which decreases in some malnutritions. Arm circumference includes bone, fat and muscle tissue. Since bone volume does not vary significantly within short periods, it is the volume of muscle tissue that is actually estimated.

E - Teeth

The first teeth are called milk teeth or temporary teeth. They appear in fixed order (but according to a highly variable schedule) over a period which extends, on the average, between ages six and thirty months. There are twenty milk teeth in all. In children under two, the number of teeth is an indicator of maturation.

— from 6 to 12 months: median followed by lateral incisors (8 teeth). The lower median incisors are usually the first to appear;

— from 12 to 18 months: the first premolars (4 teeth);

— from 18 to 24 months: the canines (4 teeth);

— from 24 to 30 months: the second premolars (4 teeth).

Then, starting at six years and usually beginning with the upper teeth, the milk teeth are progressively replaced, the first to fall out being the first to have come in.

3. LEARNING ABOUT ONESELF, OTHERS AND THE ENVIRONMENT

The first years of life are of prime importance: intelligence, emotional life and social relationships develop with such rapidity during this period that it can be said that the successful outcome of the first years will largely determine the child's entire future in a positive sense. Likewise, any disturbance not recognized and appropriately treated in time may seriously reduce future capacities.

This astonishing maturation of the nervous system is of the highest importance, for it prepares the way for the development of the intelligence. Optimal development of this faculty requires not only normal physiological maturation but a favourable environment as well.

This means that the child's education does not begin when he starts school. **Schooling sows the seeds of learning but the soil must be prepared well in advance if the planting is to take.**

The first and most important teachers are thus the parents or those who take their place. They must be conscious of this responsibility, absorbing and inspiring as it is but also extremely serious and not free of danger. They must know not only what will encourage but also what will impede the child's evolution. Many children are retarded because of an unfavourable environment rather than a problem of maturation. It is particularly necessary that the parents, especially the mother, have the capacity and knowledge required to bring up a child correctly. Inadequate parental care seriously handicaps child development. It may be more common in countries, regions or population categories in which mediocre socio-economic conditions prevail, but this is not necessarily the rule. What is particularly lacking in a disadvantaged setting is **"maternal availability"**, the amount and quality of time the mother is able to devote to her young child.

Numerous developmental anomalies in children of under-privileged families are attributed to heredity whereas they are really due to bad living conditions before birth and in the earliest period of life. Such children would have the same chance as others if their families were able to give them the necessary care and affection. The child's progress can suffer not because of his heredity but because he lives in an atmosphere which is hardly conducive to the free blossoming of his potential. Brought up in a better atmosphere, he would not retain any distinguishing mark linking him to the limitations of his earlier existence. Educators working with young children should be prepared to recognize such problems, brought about by an unfavourable milieu and especially by a mother who is in some way incapable or unable to give the needed attention, in order to guide and counsel them.

4. LIVING CONDITIONS SHAPE THE CHILD'S DEVELOPMENT

Between groups of children belonging to different social classes, there are variations in size and weight at birth which, in addition to the role of the environment, will have considerable consequences in later life. This is confirmed in infancy and early childhood.

The child's growth and development are affected by multiple factors. It is difficult to separate these factors because in real life they are intimately associated: food, housing, hygiene and living conditions, medical care, family size, child spacing, parents' health, family economic level, relative proportions between activity, rest and sleep, etc. Unfortunately, disadvantageous factors very often accumulate within the same families.

Living conditions have a determining influence: if conditions are favourable, the child has the best chance for satisfactory growth and fulfillment of his natural possibilities; detrimental, the child may be prevented from realizing his native potential. The younger the child and the longer the duration of a given set of living conditions, the more decisive their role. The handicap eventually created may be irreversible and thus definitely compromise the child's progress.

A - Food and nutrition

Food plainly plays a large role in development. Not only is nourishment decisive for physical growth — particularly of the brain — but during the first months of life it is one of the fundamental means of interaction between mother and baby.

Though somewhat variable according to climate, state of health and even conditions of existence, nutritional needs are closely related to rate of growth and development.

The various nutritional needs of children — be they the need for calories, proteins or water — will not be discussed here, since a forthcoming issue of this journal will be devoted to the small child's diet.

For infants, the ideal food is still mother's milk. Qualitatively and quantitatively, it provides the elements required for the child's development. It is perfectly appropriate for satisfying growth requirements, especially those of the brain; it provides the child his best chances for good development. It is perfectly digestible, protects against infection, is ready for use, at the correct temperature, and free of germs. It is economical.

Furthermore, breast feeding fosters close physical contact between mother and infant and is the most advantageous way to establish a good mother-child relationship. In the absence of breast feeding, a bottle given with loving care can equally benefit the child's development, but in many underprivileged countries, bottle feeding is so hazardous that deprival of maternal nursing significantly decreases the child's chances of survival.

Weaning is a crucial and delicate period, particularly in developing countries. The weaning period begins when foods other than mother's milk are introduced into the diet and concludes in the months following the total cessation of nursing. Too early or poorly

managed weaning is at the origin of most childhood nutritional problems and most especially of malnutrition which appears, in the majority of cases, within the months following partial or complete weaning.

Some major principles to be followed in weaning:

— it should be gradual;

— replacement foods should be sufficient in calories and be balanced (especially supplying proteins in sufficient quantity and the right quality, readily assimilable and if possible based on local products);

— the first non-milk foods should be introduced at about the fifth of sixth month and be properly and sufficiently cooked;

— food should be prepared just before eating and given by spoon;

— final weaning should be as late as possible;

— dietary weaning should not be accompanied by emotional weaning.

Among family activities, meal-times have very great influence on children's psychological development. Yet this occasion is largely neglected. In many different types of societies, the meal is one of the moments of the day when all the family is together (whether it is nuclear family or the "extended" family). The family meal favours the child's evolution, especially on the emotional level through interaction with parents, brothers and sisters. Furthermore, it is one of the best times for learning language and rudiments of hygiene and nutrition. However, the significance of meal-time is different in some countries; such differences must be analysed so that tradition is not neglected in early childhood education.

B - A healthy environment

No longer confined to cradle, play pen, mother's arms or back, the child who begins to walk and soon to run explores the world. He encounters germs, viruses and parasites. This encounter is more or less precocious and more or less violent depending on ecological conditions, household and family hygiene, characteristics of local epidemiology, and above all association with adults, other children and animals.

The *physical milieu* and its elements (air, ground, and everything making up the environment) have a manifest influence on human health. Physiological integrity cannot be maintained in unwholesome surroundings. This is true for adults and even more so for children whose organism is not yet immunized and therefore more vulnerable to assaults of the outside world.

Moreover, the child's organism is in a state of flux. Even if life is not immediately endangered, disease may compromise development, result in a more or less serious infirmity, or initiate a pathological process whose consequences will be felt sooner or later. Therefore, it is essential to provide children with the best possible ecological conditions. The numerous harmful factors can be grouped under two headings:

— "traditional" elements of *bad sanitation:* poor quality of water supply, lack or total absence of latrines and refuse removal, rapid multiplication of insects (particularly flies) and parasitic rodents, indiscriminate mingling with animals (cramped living quarters)... This set of ecological factors easily explains the mediocre sanitary condition of certain

populations in which infection, chronic parasitic disease (malaria) and all kinds of diarrhoeal ailments are prevalent.

— *contagious disease:* early childhood is the age of the common contagious diseases (measles, chicken-pox, mumps, rubella, pertussis, poliomyelitis...) caught by contact with other children (older brothers and sisters, playmates, classmates). For example, measles strikes more than half the children between birth and six years, even in developed countries; this percentage varies according to milieu (rural or urban), overcrowding of housing, and many other factors. In the case of children living under unfavourable conditions and in a generally precarious state, measles is a very serious disease. It aggravates preexistant digestive disorders and often results in malnutrition. Besides, it is much harder for a child in substandard health to combat the disease and its complications.

The course of early childhood is threatened by numerous digestive (gastroenteritis) and respiratory infections (nasopharyngitis, bronchitis, pneumonia...) of microbial and viral origin; their incidence is difficult to estimate but it decreases sharply between two and six years. Contrary to what is observed in inadequately nourished populations, these infections seem to have no further repercussions on the development of well-fed, healthy children.

However, it would be extremely dangerous to rely solely on the chance occurrence of a mild, perhaps even unnoticed disease to thoroughly immunize the child. Children are threatened by too many serious infections: when effective, harmless vaccines are available, they should be administered.

Some vaccinations should be performed at birth and at reasonable intervals thereafter, especially during the first year of life. These should follow a schedule established in conformity with the known local situation with respect to infectious diseases (1).

C - Emotional environment

The physiological climate in which the child lives is of primary importance from the very first days of life and even before birth. The prevaling household atmosphere, the affection lavished on the baby, his place in the family, the security he finds there — all this is important for the infant from the moment he is born (2).

During the first year, the child's relations are established mainly with the mother or the person who replaces her. We are only too familiar with the developmental disorders which can arise in children deprived of motherly care. Similar situations are observed in infants hospitalized for more than a week when the missing maternal attention is not provided by hospital personnel. That is why it is important to avoid unnecessary hospitalization by means of home care visits, and when hospitalization is unavoidable, to do everything possible so that the mother can be with her sick child. For nursing babies this is an absolute necessity.

(1) See N° 162/163 devoted to immunization.

(2) See N° 164 devoted to the early mother-child interactions.

The child thus deprived is overly calm, apathetic, sad. He does not try to sit up or grasp objects. Why should he do it and for whom? He withdraws into himself, his gaze is vague, he spends his time rocking himself in his cradle or ruminating burpedup food. Self withdrawal is the opposite of development. Harmonious growth is possible only when the child establishes contact, mutual interaction with his human surroundings.

After the age of two years, development is clearly less sensitive to the emotional climate. Even if neglected to some extent, the child will eventually walk and talk. But the consequences of emotional deprivation will surface as behaviour disturbances (enuresis, personality disorders), and the risk of future social maladjustment. Learning to live and grow up takes place in the family context, whether it be the extended or nuclear family.

Adult behaviour has its origins largely in the emotional life of the young child, his relations with his father, mother, sisters and brothers. The quality of the family atmosphere influences the extent and value of a whole series of stimulations which constitute, for the child, so many incentives to progress.

However, stimulation and strict training are not the same thing. It is not a question of forcing nature; the result would be perhaps nil, if not disastrous. There is a period for mastering a performance which presupposes adequate development of brain, musculature and coordination and the successful completion of the preceding stage. This means that it is of no avail to insist, at all costs, that a child walk at 9 months or read before six years. The benefits would be considerably fewer than the drawbacks. It is pointless to aim at exceptional progress. The child must never lose his parent's confidence or affection because he cannot meet their demands, sometimes excessive for his age: this would have a highly negative influence on his development.

D - The child's life rhythms

Study of vital function variation with respect to time in the course of 24 hours or seasonally has greatly expanded in recent years. Physiological functions are ruled by a certain periodicity which may be established by an internal programme and influenced by external factors.

In a 24-hour period, there are variations in human activity, the most important of which is the alternation waking-sleeping. Work efficiency is not at the same level throughout the day. A mid-day lowering of capacity is well known and, contrary to supposition, independent of nourishment or work tempo.

Children require a stable set of life references indicating time to eat, time to sleep, but this schedule must correspond to their physiological rhythms and be adapted to their needs. Disregard of biological rhythms, for example with respect to sleep (night, afternoon nap), regular succession of work and rest, meals, etc.... engenders fatigue, a degree of hyperactivity or nervousness. This is particularly evident in the young child who often, at the age of two or three, is obliged to change his schedule because, he has started nursery school, for example. From one day to the next, the child must learn to live with thirty other children and adapt to the tempo of the institution and the teacher. The problem of alternating activites according to an objective understanding of each child's own pattern of changing interest will be touched upon in another chapter.

It is hard to know how much a child really needs to sleep, but on the whole, three to five years-olds ought to have about 12 hours' sleep. The under-fours should take an afternoon nap. Sometimes older children feel the need for a nap. In any case, there is a transition

period during which the child sometimes sleeps in the afternoon, but not regularly. These needs are variable among children; some require much sleep and others are satisfied with less. The child's rhythm can be known only by observation (1). Children may suffer sleep disturbances at certain periods of their life. These are often of short duration and should not be dramatized, punished or ignored. Bedtime rituals are very important. Creating a calm atmosphere, attending to the child and telling him a little story are some ways of encouraging a calm night's sleep.

Toilet training begins during the second year in societies in which the incentive is strong. The quality of the mother-child emotional relationship has a determining importance in this process. In many regions, mothers take a great interest in the infants' excremental functions. No kind of training is possible during the first months and the mother is very tolerant. Later on, in certain countries and especially where the baby is carried on the back, the mother effects a forcible training by putting soap and water in the infant's rectum at fixed intervals. Then the mother sits on the ground, toes together and heels apart to form a receptacle. She seats the infant on her feet thus arranged and while amusing him, urges him to relieve himself. Sometimes children have a natural regularity, or else the reflex to urinate when their diapers are removed, a tendancy that greatly facilitates rapid toilet training.

However, maturation of neurological sensitivity and sphincter motor function is an essential prerequisite in learning to control bowels and bladder. It is therefore impossible to rush matters excessively. At about two years, the child is old enough to control his sphincters and understand what his mother wants. Toilet training can then be carried out without any real difficulty. Day-time training is always the first accomplished.

If there is some latent emotional conflict between mother and child, or if a premature training attempt has brought about a reaction of revolt, the child has an excellent means of showing his opposition by refusing to cooperate. Control of bowels and bladder is the example which typifies a developmental period demanding, simultaneously, adaptation, stimulation, and physiological maturation.

Life rhythms are thus made up to sequences imposed by the environment with the regular succession of days, nights, and seasons, and by the culture and religion with its festivities, market-days, etc... There are also the physiological rhythms made up of alternations imposed by the organism (waking, sleep, rest, activity, etc...), phenomena common to all in broad outline but differing in detail for each individual. The most important thing is to understand, respect and utilize the needs and capacity of the child in this domain in harmony with the rhythm of life of family and community.

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(1) See n° 125 devoted to the biological rhythms of the children.

5. THE CHILD ON THE ROAD TO DEVELOPMENT: SOME LANDMARKS

The attainments listed below are not milestones that the child is obliged to pass at precisely the age given. They are more in the nature of landmarks in the development of motor function, perception, language, interpersonal relations. Many more might have been added to the list. Parents and personnel wil find them for themselves, through observation and experience.

From birth to 3 years

From birth to 3 months, the child:	Remarks
- sleeps most of the time - learns to raise his head, then to hold it upright - learns to follow a moving object with his eyes, look at a face, smile in response - discovers visually the world around him - reacts to noise - recognizes his mother on sight, but especially by smell, hearing or perhaps sensory perceptions hard to define - adapts and sharpens his primary reflexes such as grasping: he involuntarily retains an object placed in his hand - babbles spontaneously and in response.	It is often thought that the newborn is a vegetative being who sees and distinguishes nothing. This is false. The newborn communicates with his entourage, reacts to his mother's mental state (calm, nervous): from the 3rd month, an anxious mother's child shows his own anxiety by screams resembling cries of pain.

From 3 to 6 months, the child:	Remarks
- keeps his head up and if supported, can remain seated a short while - begins to voluntarily grasp an object within his reach and reach for an object held out to him - puts things in his mouth - tries to broaden his field of vision, for example by leaning on his forearms if he is on his belly, or raising head and shoulders if he is lying on his back - bursts into peals of laughter and screams with joy when played with - begins to look for lost playthings.	At this age, the child grasps objects not with thumb and index but between palm and four fingers. The baby's mouth is an important learning tool.

From 6 to 9 months, the child:	Remarks
- can keep himself in a sitting position without help, for a short while - if lain on his back, turns over on his belly - can crawl to approach an object or person - begins to be able to stay standing up if held - puts things from one hand into the other, holds something in each hand - grasps little objects between thumb and forefinger - amuses himself by throwing things - utters several linguistically meaningless syllables - recognizes the faces of members of his family and may be afraid of strange faces - begins to take part in relational games (clap hands, hide-and-seek).	In certain countries, the seated position is acquired earlier.

From 9 to 12 months, the child:	Remarks
- can stand up alone (for example, by holding on to a piece of furniture) and can walk held by both hands, then by one hand or by holding on to a piece of furniture - imitates a sound (for example, by striking two objects together) - repeats a sound he has heard - learns to say two or three words - understands a simple order or prohibition - shows great interest in exploring the world, wants to see everything, touches everything, and puts everything in his mouth - participates fully in games with grown-ups.	The child repeats syllables he has uttered and which have a meaning assigned by the entourage.

From 12 to 18 months, the child:	Remarks
- walks alone and explores the house and its immediate surroundings - piles up two to three blocks - fills up a receptacle (cup with small objects, blocks, pebbles) - shows jealousy (angry gestures, tears) and feelings of rivalry in playing with older sisters and brothers.	The young child's socialization and initiation to group life begin by these normal manifestations of rivalry and even aggressiveness.

From 18 to 24 months, the child:	Remarks
- goes up and down a staircase, first held by the hand, then alone, holding on - piles up six blocks - shows his eyes and nose - puts two words together and adds to his vocabulary - learns to eat alone - copies a line on paper or in the sand - begins to control his bodily functions during the day (stools, then urine) - shows increasing interest in other children and tries to play with them, but in a very self-centred way (taking the toys, for example).	Learning to be toilet trained depends greatly on cultural habits; age may be variable.

From 2 to 3 years, the child:	Remarks
- learns to jumb, climb, can hop on one foot - can build a bridge with three blocks - acquires considerable language development, uses "I" and "me", begins to ask questions, understands most of the words and phrases addressed to him - can reproduce a circle on paper or in the sand - begins to really play *together* with other children and to understand that there is another world outside the family nucleus.	The age of 2 years marks the true beginning of socialization.

From 3 to 6 years

From 3 to 4 years, the child:

- goes for walks alone, goes to visit the neighbours
- can walk on tiptoe
- learns to dress and undress himself alone
- is toilet trained at night
- copies a cross, can draw an approximation of a human figure with head and trunk, sometimes other parts of the body
- knows two to three colours
- speaks intelligibly but retains childish mannerisms
- can tell his name, sex and age
- asks many questions, wants to know how children are born
- knows which is up and down, front and back
- listens to stories and asks again for those he likes
- plays with other children, begins to share
- shows affection for younger sisters and brothers
- becomes able to carry out simple chores.

From 4 to 5 years, the child:

- leaps, jumps, swings
- goes down stairs one foot on a step
- draws a human figure with head and limbs and principal parts
- copies squares and triangles
- speaks in a completely intelligible fashion
- can count his fingers
- listens to a story and can repeat the main points
- still asks many questions, is interested in new words and their meaning
- protests vehemently when prevented from doing what he wants
- knows four colours
- can estimate size and shape, tell little from big
- shows interest in adult activities.

From 5 to 6 years, the child:

- knows how to climb a tree, dance to the sound of music
- can catch a ball thrown from one meter
- speaks correctly, loses childish language characteristics
- draws a human figure with head, trunk, limbs, hands
- begins to distinguish right and left, yesterday and tomorrow
- is interested in what goes on in the house and the neighbourhood
- is interested in the age of young people, old people
- distinguishes sweet, salty, sour, bitter
- invents games and changes the rules during the game
- hates to have authority imposed, obeys orders slowly
- does simple chores with attention.

6. SOME OBSTACLES ON THE ROAD

For optimal child development, a certain number of conditions should be assembled: family that provides the child with security and affection, harmonious relationship between mother and father, stimulating atmosphere, satisfactory physical health, balanced nutrition, instructive games and interesting activities.

Unfortunately, it is not at all rare to find some of these conditions missing and then there is the risk that certain of the child's developmental faculties will be endangered. That does not necessarily mean that he is condemned to live below the level of his possibilities. If the existence of a deficiency in the young child's environment is recognized early enough, it is often possible to correct it, to decrease the risk by rapid and adequate action.

A - Effects of malnutrition on children's development

Protein deficit leads to a clinical picture of malnutrition called kwashiorkor (1); calorie deficit plunges the child into a state of marasmus (2). However, these two phenomena are very frequently intermingled, and we speak of protein-calorie malnutrition (PCM). PCM effects on the young child produce a variety of disorders, some acute, others chronic and having long-term consequences capable of persisting for months and years if not indeed permanent and handicapping.

PCM may affect staturo-ponderal growth. In order to try to recognize the short and long-term repercussions, three factors must be taken into consideration: child's age at the onset of nutritional disorder, duration, severity. The younger the chid and the longer the duration, the more serious the after-effects are likely to be. The child may be unable to make up for his staturo-ponderal retardation.

PCM also affects brain and psycho-motor development. Disease severity and child age are important factors here as well, for the brain is most vulnerable in inverse proportion to age. Sequelae have been observed on the level of integration of sensorial perception, memory, observation faculties and therefore cause learning difficulties. All these results should, however, be interpreted with great precaution, because a multitude of other factors may intervene. In any event, it can be said that behaviour changes are among the earliest but most constant signs of childhood malnutrition. The child is downcast, irritable, withdrawn, tires quickly and plays little. He has no interest in his surroundings. Thus, he fails to make the discoveries accessible to him and stimulation is without effect. The child is cut off from all stimulating and constructive experience. If this state continues for any length of time, the child falls behind with respect to the others. His psycho-motor and intellectual aptitudes are less than normal and social adaptation presents difficulties.

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(1) Kwashiorkor is the result of an imbalance in daily diet with protein deficiency. The child is swollen with edema and may present cutaneous lesions.

(2) Marasmus is the result of insufficient calories in the diet. Child is skinny, gaunt, wrinkled with protruding ribs and long bones.

One point is certain: when considering mental deficiency, it is extremely difficult to disassociate the part played by malnutrition itself from that which can be attributed to inadequacy of intellectual and emotional stimulation within the family and the harmful influence of the physical surroundings (particularly hygienic conditions). All studies tend to prove that nutrition and environment are closely linked factors. It would seem, therefore, that only enrichment and transformation of the setting in which the child grows can assure him balanced nourishment and an adequate cultural and emotional climate.

Solutions which address themselves simultaneously to both nutritional and intellectual needs would allow adjustment to future social life and an escape from the infernal cycle of the civilization of poverty.

B - Effects of poor environmental hygiene on the child's development

Parasitoses, infectious disease, malaria, diarrhoea, bronchopneumonia are the major afflictions striking children of this age group in developing countries. They tend to impair development. The only solution is to establish immunization programmes along with environmental sanitation programmes (construction of latrines, waste water drainage systems, anti-vector actions) and improved qualitative and quantitative water control, for water is either overabundant or insufficient and almost always a source of contamination. Means of protection against climatic conditions should also be considered: housing, clothing, corrective heating, etc. Such actions would make it possible to check major causes of mortality and morbidity that attack young children (sickness due to heat and cold, intestinal ailments, malnutrition and diseases transmitted by water-borne vectors).

C - Accidents

In all industrialized countries, accidents rank first among causes of child and adolescent death and represent from 37 to 62% of deaths among boys from one to fourteen years and 25 to 44% among girls. Though they are not rare, accidents are not the primary cause of death during the first year of life, since there are still many other difficulties connected with birth. Heat stroke, mechanical suffocation from swallowing the wrong way, smothering, falls, burns and poisoning are the usual causes. In developing countries, the picture is somewhat different because mortality due to diarrhoeal diseases, broncho-pneumonia, nutritional and infectious disease (measles) still holds a very important place. Even if accidents are only at fourth or seventh place, the number of deaths from accidents is nevertheless often much higher than in the industrialized countries. Moreover, their proportional importance in general mortality is increasing rapidly. The situation is frequently quite serious in developing countries because children are faced with two categories of dangers: food, infection and parasite hazards and the risk of accidents. It is even more difficult to speak of morbidity (1) for the details are still little known, but many accidents bring about hospitalizations and handicaps which are a heavy burden on the society. When one mentions children's accidents, traffic accidents come especially to mind, but there are also domestic accidents, those that take place outside the house, within the house itself, at kindergarten or during any other activity. Among the most frequent accidents are:

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(1) Total number of accidents causing bodily injury, within a specific time, in a given population.

— burns from scalding liquids (water, oil), chemicals, fire, electricity, electric irons;

— poisoning due to drugs, household items (drinking bleach, paraffin, etc.), agricultural supplies (pesticides, fertilizer...); mushrooms, plants, and carbon monoxide (defective heating apparatus);

— falls from furniture, out of trees or windows, etc;

— drowning (children playing on the banks of a waterway, lake, pool, pond, well...). Children can drown in very small amounts of water;

— asphyxiation: children die of suffocation from inhalation of foreign bodies, being trapped in sand or putting plastic bags over their heads;

— wounds or injuries from sharp-edged or pointed instruments, fire-arms, pinching (finger caught), from concussion (falling coconut, etc.). Animal bites (snakes, dogs, etc.) and being butted by horned beasts.

From one to four years, accidents happen most often at home or around the house, the most dangerous place being the kitchen and in general any place where fire is made (burns). Traffic accidents, as well as drowning and poisoning, also occur at this age.

After age five, accidents take place for the most part outside of the house. Situations are dangerous at one age rather than another because of the psycho-motor characteristics at a given age. From the first, the more daring character of boys makes them more liable than girls, but all children are exposed to accidents: the principal cause is that the milieu is not organized with children in mind. The milieu is organized by adults, for adults, and for the child it is full of dangerous pitfalls.

Contrary to common supposition, accidents are not due to chance. Most of the time, an accident is not an unpredictable event. On the one hand, the child is vulnerable. On the other, he is at an age at which he is trying to discover, find out about things, experiment, and he does not always have the requisite psycho-motor or sensory development, nor sense of danger, nor the experience necessary to avoid an accident. It is always difficult to find the balance between the child's desire and need of action and discovery, the margin of risk permissible so that he can learn, and the obligation to protect him from accidents. Prevention and education campaigns should be initiated to limit accidents and to this end, it is indispensable to know more about the conditons in which accidents take place. This is the whole problem of the epidemiology of accidents and the psycho-cultural reaction to danger and death. These campaigns should be correctly focussed: the subject here is the child, his human entourage and his material environment (1).

D - Minor behaviour disorders

Signs of anxiety are frequent in early childhood, but are most often benign. Thus, at about six to eight months, an unfamiliar face can set off a distress reaction, quickly calmed when the mother reappears in the field of vision. Fear of the dark, of being alone or abandoned appears later on.

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(1) See N° 123 of "Children in the Tropics".

The child who feels secure shows little anxiety. The child living in a disrupted and unstable environment, who feels threatened and not really loved, is much more often a victim of anxiety. The same is true for children tossed about from one life situation to another.

When symptoms of distress persist after the age of three, the child's life must be examined for causes of excessive insecurity.

Manifestations of aggression and opposition are also commonplace. It is remarked that between two and four years the child passes through a period marked by violent fits of temper and aggressive attitude. These tantrums are not abnormal but they sorely try the parents' patience and educational principles.

Aggression is a means of self-assertion. It must, however, be dealt with rather firmly so that the child can become accustomed to this reaction and later be prepared to face aggression by others and to control his own reactions.

Certain children have little appetite. The reasons might be anything from a cold to deeper causes: change of diet, monotony, or even meals that are the occasion for reprimands or parental disputes. But some children just refuse to eat. At this point, it is much wiser to take matters calmly, so as to avoid installing anorexia (1). The parents must behave as if indifferent, not give way to anger or panic. If the child is lively and in good spirits and, according to the doctor, in satisfactory health, one must be patient and most often the conflictual situation will eventually subside by itself.

E - Children of socially underprivileged families

Many children live in families of a low socio-economic and cultural level in which there is not much conversation, little stimulation, and the baby is left to himself. He may be the most loved baby in the world, but nevertheless, the child thus raised develops in a way distinct from that of the majority of children; his intelligence takes a different form. Such children need an educational complement to make up for what the family cannot give them. In this case, every effort should be made to help the parents also to develop a more stimulating relationship with their children. The institution attended by such children (crèche, kindergarten, day care centre or nursery school) plays a primary role in helping develop their unawakened faculties and leading them to school age with the best possible chances for satisfactory adjustment.

F - Children of single parents or disrupted families

The child raised by the mother alone (unmarried, widowed or separated mothers) is liable to have difficulty in building his own personality, a task which requires emotional ties with both parents. The child should be able to have some conception of the absent parent, either through the mother's own recollections or by direct contact with some male individual of the entourage. Most often, the mother successfully carries out her maternal role and provides the child with a satisfying paternal image. The supportive attitude of the mother's immediate circle can be greatly helpful in this delicate task.

The outlook is less optimistic when one of the parents displays personality problems or is mentally disturbed, or if the child feels the effects of conflict between mother and father, to which children are extraordinarily sensitive.

7. PROMOTING HARMONIOUS DEVELOPMENT: RECOMMENDATIONS

The parents play a most important role in the overall development of the child (1). It is almost an exclusive role during the first two years of life. Starting at age three, the child moves about, receives stimulation from the surroundings other than the family (neighbours, young friends). When a crèche, health centre, kindergarten or nursery school exists and is attended by the child, the personnel must act in such a way as to promote his harmonious development, and also to detect, as soon as possible, the difficulties of all sorts that may hinder it.

While the harmonious development of the infant and the young child depends on emotional life, relationships and play, it is also full of risks and chance. The risks of impairing it are numerous, and the child must be protected from them. In itself this is insufficient, however, and we must positively increase his chances as well, so that none of his possibilities will be neglected.

To do so, the educational personnel must work in close collaboration with the parents. Coordination with parents must be the basis of every action aimed at enabling the child to attain full, harmonious development. Parents should not be allowed to throw all responsibility for the development of their children onto the personnel.

Educational or health personnel must conform to certain principles in working with parents:

— **respect the family and the parents:** it is important to help them by giving them self-confidence, by informing them of their role and of their children's needs;

— **respect the child,** his rhythm of development, his specific features: the idea is not to train him strictly, to obtain exceptional performances or to create infant prodigies;

— **know how to listen:** true education does not dictate rules, it enables those who benefit from it to discover, on their own, how to act and participate. It should be possible to help parents learn to understand their child's needs and to satisfy them, rather than replacing them: it is up to the personnel to adjust, not the parents;

— **give top priority to the relationship between the child and his parents,** to physical and emotional contact between mother and child, to the spontaneity of educational methods, to whatever will encourage communication in all forms.

Last, parents must be permitted to retain, in their educational methods, all elements that provide a stimulating environment for the child, and one in which he feels secure.

A - Helping in the surveillance of child growth

All of the data gathered during the child's growth, from intrauterine life on (2) must be entegistred, in written form whenever possible, on a record card which remains available to the health and educational personnel, and on a note-book kept by the family.

(1) See N° 164 devoted to the early mother-child interaction.
(2) See N° 152-153 devoted to the prevention in obstetrics.

Begun during the period of prenatal surveillance, this note-book may be continued throughout the school period. It reflects the history of the child's development, from his conception to adolescence: weight and height curves, diet, infectious and parasitic diseases, vaccinations, handicaps, accidents, special surveillance, etc.

The basic elements of the child's health check-up are constituted by the weighing and measuring of the child from birth on, at regular intervals: thus, if growth slows down or stops prematurely, the causes may be sought at an early stage and remedies applied. The establishment of weight and height curves is one way of making parents aware of the importance of these two "indicators". A faltering curve in a 5 or 6 month-old baby may reveal an insufficient diet. A discussion with the parents will make it possible to examine the problem and give advice on nutrition. Four to five year-olds may be taught about weighing and measuring and introduced to many other aspects of health, as well (1).

B - Surveillance of the progress of diet, from birth on

Encouraging breast feeding and fighting the present tendency to replace it by bottle feeding, which may be dangerous in some parts of the world, where the living conditions make it impossible to respect the rules of basic hygiene.

Taking advantage of weighings for educating and informing parents as to the need for dietary supplements as early as age 5 or 6 months, and of the importance of balanced, diversified meals. Such information and education are needed everywhere: in the developed countries, where abundance generates an imbalance caused by excessive eating, and in the developing countries where insufficient resources and a lack of variety in the menu, due to monoculture produce, an imbalance by lack of foodstuffs.

Parents in these underprivileged countries must be taught to seek out available foods in the area which will balance the diet in quality and in quantity. They must be made to understand, through the weight curve, the close link between a balanced diet and normal growth. The personnel must inform parents of the essential role played by diet in the "building" of the cells of the human body. During intra-uterine life and the first years of life, the rate of growth is extremely rapid, and it depends to a great extent on nutritional intake. In addition, a poorly nourished child is more receptive to all infectious diseases and parasitoses which, in turn, affect growth.

C - Informing parents on the value of vaccinations, from the time of birth

Take advantage of village meetings, weighings, nutritional education sessions, to discuss this theme of contagious diseases, in close collaboration with those in charge of environmental hygiene. There are six diseases, dangerous for the health of children, for which vaccinations should be performed during the first two years of life. They are diphteria, tetanus, pertussis, poliomyelitis, measles and tuberculosis.

Parents' attention should be drawn to any unsanitary elements, and a study be made, with their help, of the best way to act together in order to improve water sanitation, the disposal of excreta and the destruction of insect disease vectors, etc.

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(1) See N° 166: "Teaching nutrition to young children".

D - Detecting handicaps

Weighings, nutritional education sessions, vaccinations, may facilitate communication between the health, social and educational personnel and the parents. During these meetings, the personnel should not lose sight of another essential task: the prevention of handicaps. A child may be born with diminished physical or intellectual capacities: a motor, visual or hearing handicap is not always noticeable during the first three months. There is therefore a need, during these various contacts, to draw the parents' attention to this problem, ask them to be highly vigilant in the observation of their child's behaviour, and encourage them to express their suspicions during various talks. This is well illustrated by the experience of the people working in Cali, Colombia, which is described in this issue.

There are means for detecting motor, visual and hearing handicaps during the first year. The personnel must take the parents' suspicions seriously. They will use, and teach parents to use, the simple means for detecting the suspected handicap, and inform them of the possibilities for a more thorough examination.

E - Preventing accidents

Parents must be as vigilant in preventing accidents as in detecting handicaps. A lack of supervision, order and authority in the family milieu is as much a risk factor as the problems linked with housing, region, climate, season, etc. However, there is a positive aspect in confronting the milieu, as well as a risk of accidents. It is here that the child first learns to be careful, and at the time this experience may be educational, if well conducted.

The personnel must teach parents that the child needs total protection in his home or home replacement, particularly during the first year of life. When the child begins to move around and explore his surroundings, he must be allowed to make a series of limited experiences during which he will learn, for instance, that fire burns, certain objects cut or sting, etc. As soon as the child becomes educable, the family must gradually move from a protective attitude to one of active education, thus avoiding both negligence and overprotection, gradually allowing the child to recognize risks in order to avoid or face up to them. Home visits are the key moments of this instruction of parents, for the educational message may be adjusted to the environmental conditions.

Washing hands (1)

II. EDUCATION FOR YOUNG CHILDREN

1. CHILD DEVELOPMENT AND PLAY

"It is the law of play that rules childhood activity". Froebel (1782-1852).

"The child's play is the child's work, it is his job, his life". P. Kergomard (1838-1925).

(1) All photos furnished by M. d'AGOSTINO

These conceptions, expressed by child educators of different times and different nationalities, indicate the importance of play in the child's life; it is an indispensable activity. Indeed, play is a spontaneous activity for children and is the basis of all the attainments which enable them to blossom fully, respecting their *global development*. It is a free activity, constituting an end in itself: it provides pleasure to children and captivates them completely. It progresses with them while helping them to progress. The growing child goes through a series of phases or stages. All children go through the same phases, in the same order but at different paces. Each stage of development is necessary: it corresponds to a certain number of attainments, reached in a given order because they are linked with maturation. Each stage involves a preparatory level and an achievement level; it is a result of the previous one and announces the next one. Play helps the child to go from one phase of development to the next one. In our analysis, we will discuss the two essential forms of play: the sensori-motor form and the symbolic form. These are linked to two stages of the development of intelligence characterizing children from birth to age seven (according to Piaget). In reality, of course, these stages are not as distinctly separate as in this document, for there are many interferences between them. The same is true of the different forms of development (psychomotor, cognitive (1), socio-affective), presented separately here. The aim of this presentation is to make the text easier to read. It is most important to keep in mind the fact that the child's development is global: intelligence, growth and emotional life are interlocked and inseparable. Emotional life provides the energy required for the physical, moral and intellectual evolution.

A. THE SENTORI-MOTOR FORM OF PLAY

The first sort of play, for children, is functional play, the only sensori-motor form, but one which will be used throughout development. When each new aptitude emerges, by the simple fact of physiological growth and maturation (holding the head up, making noises, walking...), it calls up playful forms through which the child integrates and explores the new ability. All of the baby's spontaneous activities are playful in nature: the first vowels, the first modulated syllables, the first steps, the first scribblings. This play, which we call functional, is simultaneously play for exercise, for exploring, for observation and for manipulation.

The evolution of functional play

The baby accidentally discovers his ability to make certain movements, which are very simple ones at first (stretching and kicking the legs, moving the hands). It then repeats them for the simple, functional pleasure, in order to produce known effects or to assert a newly acquired knowledge. These abilities are tried out to their full extent. (They occur and become set according to a constant unmodifiable process). Play is not closed around the aptitude, it tends to reinforce it, to change it into a new tool for further progress.

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(1) Relating to understanding, intelligence.

The child has an innate appetite for learning, and explores his body, then the objects placed at hand. He handles, looks, smells, tastes, sucks, tears and destroys. As he acquires new motor abilities enabling him to move about (crawling, moving on the buttocks, walking on all fours, walking), his field of exploration is enlarged. He then discovers an infinity of objects. His experimenting is hesitant: he has no idea of its limits or of its dangers. It is solitary: the child only calls for help when it has a desire or a need to be satisfied.

a. How sensori-motor play contributes to the different phases of the child's development from birth to age two

Psycho-motor development

An organism only develops in as much as it functions. Small children play at the untiring repetition of the same movements, the same actions, which enable them to reach the attainments made possible by the maturation process. At birth the child's movements are uncoordinated. Between birth and the age of two he acquires two major motor capacities: walking and the ability to grasp objects between the thumb and the index finger.

At a certain point of nerve maturation, the child has enough muscle tone to hold his head up (between one and three months). Next, he can sit up in a stable fashion (between seven and eight months), sit up when lying down, crawl and walk on all fours (towards eight or nine months), stand up when leaning on something (towards ten months) and last, walk alone (between twelve and eighteen months). (Neuro-motor control progresses from the head towards the feet and from the trunk towards the fingers).

The coordination of vision and grasping is also the result of the combined effects of exercise and maturation. Towards the age of three months, the child sees his hands and plays with them. Towards six months he is able to grasp objects intentionally. Towards the age of one he succeeds in grasping them between the thumb and the index. Once these basic performances have been acquired, it remains for the child to improve them.

Cognitive development (the development of intelligence)

The first preliminaries of cognitive development are constituted by the most elementary body activities. In order to learn, the child must act. In this he differs from the adult, for he lacks the adult's experience: for him, everything remains to be discovered. Intelligence is not acquired through heredity, it is not given at birth, it is gradually built up. Through his play and experience in using objets, the child stores up sensory information which will enable him to base his thought on concrete elements. His manipulations are most important: they lead him to "record" sensations which will be identified later, when he learns to speak (development of the symbolic function), (it is round, it is orange, it has a special smell: it is an orange).

It is through play that the child formulates patterns: the mental images which will bring him to conceptualize. The images of similar objects perceived on many occasions are imprinted in the memory in the form of images, only representing the shared attributes of the objects encountered: this is what conceptualization means. The concept is the term corresponding to this mental operation.

The concept of "glass", for instance, develops as the child sees a number of glasses. The memory leaves out of consideration the size, shape and colour of glasses, and only retains the two elements shared by all glasses: the matter of which they are made (glass), the use to which they are put (drinking).

Through the exploring of his body, then of his environment, the child learns to differentiate himself from the outside world. He establishes relations between himself and objects (he can move things), then relations between various things (the string he holds makes the bell ring), and gradually discovers his body scheme (1).

At first, his intelligence is practical in nature, it serves to formulate patterns for action in space, time and causality. This initial spatio-temporal organization will enable him to acquire his first concepts: the child finally situates himself as an object among other objects, in a universe composed of permanent objects. The permanence of objects is one characteristic stage of perceptive development: it is only during the second year that this notion is fully acquired. The child discovers it through play: the baby is unable to imagine objects, he must see them. At the beginning, these objects cease to exist for him as soon as they disappear from his field of vision or of touch, and he makes no attempt to search for them then. (When an object placed near the baby falls or disappears from sight, he does not look for it, except if he was using it). The child enjoys repeating movements in functional play: throwing an object for the pleasure of finding it again. Thus, his thought process is structured by experiences internalized by him through their frequent repetition and their similarities. As he encounters new objects and new situations he changes his behaviour. He gradually becomes detached from immediate activity in order to assimilate it, but this internalization is sensori-motor only as long as he is incapable of representation, that is of creating symbols which restore the presence of absent objects.

Socio-affective development

The child's first games are essentially solitary: they bring him to differentiate himself from the outside world (first stage in the building of his personality), and to discover his need for others, not only to satisfy material needs but in order to communicate, for the pleasure of a presence.

At the onset of his life, the child plays with his upper limbs, his lower limbs, his mouth and his entire body, which he discovers as he makes them function. His pleasure is entirely motor; the child is self-sufficient.

His day-to-day experience brings him to discover the pleasure of exchanging. He babbles; if the adult responds, he goes on babbling and even does better at it. Play is no longer solitary, it is gradually transformed into the joy of communicating with others.

The role of the adult. The adult should satisfy the child's natural curiosity by furnishing him with objects capable of awakening his senses and developing his abilities. Wallon says, "The child apprehends the world through the mediation of adults." As we have seen above, the child's abilities and knowledge are enriched by the new things provided by the environment. The objects at the child's disposal should be varied constantly: for lack of stimulation and experience his desire for discovery will fade, and he will no longer make progress. We cannot content ourselves with letting children live in their natural manner.

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(1) The body scheme is the image each person holds of his or her own body. The first phase, for the baby, is the awareness of his body. This awareness comes about progressively, for the child's first movements only involve certain parts of his body: the arms and hands, then the legs and feet. Walking makes it possible to experiment with movements of the whole body. Towards age two (accession to the symbolic function), the child begins to have a representation of his body. The building of the body schema requires sufficient experience one's body in space. Children with a motor disability are therefore severely handicapped, for they cannot benefit from this experimenting.

They must be constantly sollicited by the environment, so as to acquire experience and to progress. Adults must also watch over the child's security, for he knows nothing of the dangers that surround him (risks of burns, drowning, poisonings, injuries, stings or animal bites), and must protect him totally during the first year by only giving him objects which do not present any risk. When the child begins to move about and to explore his environment, it is time to allow him to make a certain number of experiences, to learn that fire burns, the knife has a part that cuts, etc. He will learn to recognize the risk in order to avoid it or to face up to it. Overprotection, like negligence, should be banished.

Play and playthings favouring playful activity in children between birth and age two.

a) Playthings:

From birth to three months: pieces of brightly coloured paper or cloth, hung up, wooden or flexible objects for handling.

From three to six months: small harmless objects, wooden rings, spools, shells, noise-makers (small bells, carefully closed pottery filled with seeds, boxes...).

From six to nine months: rag ball, coloured blocks, stuffed or rag animal, pieces of wood, small cooking ustensils.

From twelve to eighteen months: blocks or boxes to pile up or juxtapose, blocks or stones to manipulate, place in a container, toys that roll, to push or pull, balls, pictures.

From eighteen to twenty-four months: water and sand, books (old catalogues for instance), balls, dolls.

b) Games: hide-and-seek, nanny games (1), songs, lullabies, etc.

b. Contibution of sensori-motor play to the various stages of the development of the preschool-age child (from two-three years to about six years).

Psycho-motor development

Functional play is of tremendous importance for the preschool-age child, who is in a period of intense growth and has a permanent need to move ("growing muscles need to be irrigated under the best conditions; bone development is ensured by the constant stimulation of muscular contractions: in an immobilized limb, both muscles and bones are atrophied." G. Vermeil).

(1) Nanny games, as their name suggest, were formerly played by nannies. The child sits on the adult's knees, facing her. Many nanny games involve dancing the child on one's knees while singing a song whose rhythm is reminiscent of a horse trotting, a donkey... Some games are spoken, like "the little animal". The adult says: there's a little animal going up, up, up"... while his fingers "walk" up the body of the child. They start near the waist and tickle the child when they arrive at the neck.

Playing outdoors...
A play area arranged by parents

The healthy preschool-age child has a good general motrocity but is still quite uncoordinated. Play helps him to perfect his movements, making them more natural, sure and effective and teaches him to coordinate them. (At age two, every one of the child's experiences helps sensori-motor coordination to progress; towards the end of the second year, walking becomes easier.) Play in the form of movements involving the entire body will lead the child to attain broad motor coordination, and will complete the effects of neurological maturation. (Towards the age of four, the central nervous system and the sense organs have developed to a point where movements are coordinated.) Play will improve the child's balance, flexibility, mastery of behaviour, harmony of movements, and will contribute to the acquisition of automatisms. These automatisms produce more harmonious series of movements, and therefore make for a greater rapidity in their performance.

The child's movements gradually become more refined, better coordinated, with the activities increasingly located in the limbs, the hands and fingers (the fingers learn to move, and the muscles are strengthened).

Role of the adult: the adult should create a play universe, using the ideas of children who he or she has observed, and taking into account their possibilities. The child should be allowed to appropriate the objects he discovers, and should be left free to enter into a relationship with them. When he is not familiar with them, the child first uses them according to his own intuitive perception (a plate may be used as a hat or as a musical instrument).

Later the adult will define the use for which the objects were conceived. The child should be allowed to cut for the sake of cutting, to paint for the sake of spreading paint, to glue just for gluing, to string beads in order to overcome the difficulty. All of these assimilate manipulations create sensori-motor habits. They enable the child to distinguish his hands and body from the surrounding environment, and to discover his body scheme.

It is up to the adult to induce situations in which the child may run, climb, jump, crawl, so that his movements become harmonious and sure, and all of his muscles are exercised: organization of running games (cat and mouse), obstacle races, etc. After observing the child's spontaneous behaviour, the adult should define objectives requiring a greater effort of him, a greater expense of energy. The difficulties should be progressive, however, so as not to be overdemanding, in which case this would no longer be play. A movement requiring some concentration may be added to an automatic movement, for example. This is indispensable to the stimulation of the organic functions.

The activities should be adjusted to the child's possibilities, and should help them to progress: only when tearing and shredding have been fully mastered is cutting up approached. The objects placed at the child's disposal depend on his abilities: first he strings up large beads, then smaller and smaller ones; he first draws with large instruments (1), on large surfaces, then the size of both the instrument and the surface decreases; the degree of coordination conditions the size of the ball to catch or throw.

The adult should dose the efforts required of the child, and should know how to recognize signs of fatigue (cf. observing the child) in order to stop before the child is exhausted. The child does not know what fatigue is, and will not interrupt an activity by which he is fascinated. Learning this is a primordial step.

Play, playthings and activities contributing to the psychomotor deve0lopment of the preschool-age child

a) Play and playthings contributing to the broad motoricity of the child

All equipments or land formations, all play situations in which one may climb, slide, crawl, jump, hop, run, whatever induces varied displacements.

(1) The word instrument is used here to designate anything which leaves a trace: a finger in the sand, a crayon, a brush, piece of chalk, a piece of coal, etc.

I wait my turn...
I learn to keep my balance

Toys and carriages to be pulled, pushed, dragged, rolled. Toys that rock, ropes for jumping, balls. All games that help to acquire balance (they require sure, precise movements).

b) Play and playthings contributing to the fine motoricity of children and to the coordination of movements.

Simplified tools for the imitation of basic skills and introducing the child to the world of techniques (hitting, screwing, bolting, fitting, sawing). Games calling for movements of the hand and arm (cranks moving gears, forms to pile up on a stick, etc.).

I'm not afraid any more...
I'm growing up

c) Games contributing to the coordination of movement and speech :

— nanny games, hand games, nursery rhymes, songs, round dances and dancing games,

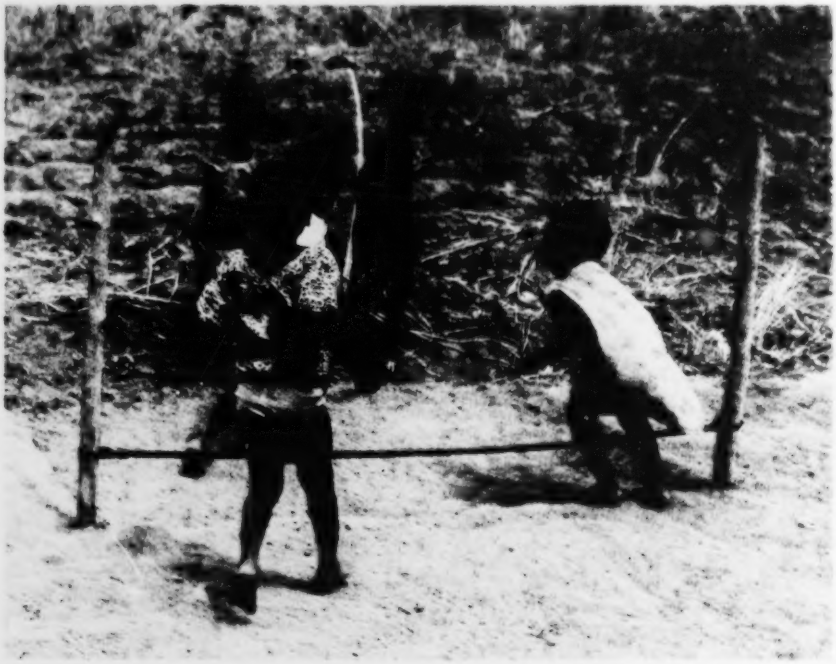
— activities in which a definite movement must be made upon a signal.

d) Play contributing to eye-hand coordination

— all manual activities (shredding, tearing cutting up, gluing, sewing, weaving, modelling, stringing beads or other objects..) as well as drawing, a playfull activity that improves fine motoricity, tests and encourages memorization, conceptualization and abstraction, using a concrete activity,

— some activities of everyday life (buttoning one's clothing or a doll's clothing, closing a zipper, lacing shoes, carrying a fragile object or one containing things which must not be dropped),

— throwing and catching something.



Let's jump... I'm learning to jump higher and higher

e) Play contributing to eye-foot coordination or balance:

— walking on a beam or a line,

— kicking a ball or other object.

f) Play contributing to more complicated coordinations:

— walking on a beam with an object in one's hands or on one's head, etc.

Cognitive development

At first, the child's mode of thought is syncretic (1): the child only knows the present moment, and does not distinguish between self and non-self (he sees himself in the mirror and says he sees a baby). His perception of things is global and subjective. He does not establish relations between the elements of a complex whole. This syncretism is one aspect of the infantile egocentricity which unifies the child's personality; his language is an expression of it. (cf. verbal language). The child's vision of reality is more emotional than

(1) Syncretic: forming a whole, perceived globally.

I'm becoming skilful...

intellectual, with no clearcut boundary between the subjective and the objective. He is not aware that his experience is only partial and temporary, and values it as an absolute. He does not adjust his thought to reality. He locates within himself what we locate outside, the thought or the word are as real to him as the thing itself (infantile realism). He projects his person onto things and attributes his own features to them (animism). (He strikes the chair on which he stumbles, and says it is nasty !) Objects are believed to be able to move and act (anthropomorphism). He believes that everything was conceived for people and by people (artificialism), and for a reason (finalism).

We may use these characteristics of infantile thought to understand the way in which intelligence develops with the help of play (going from subjectivity to objectivity, from the concrete to the abstract).

The child's functional intelligence is stimulated by his animism, which motivates his interest in things, and enables him to enter into sympathy with them.

His artificialism leads him to establish causal relations and to seek an explanation for what he sees. This brings the child to a scientific attitude.

It is through play that the child develops his ability to analyse, makes syntheses and gains access to logic. He develops skills which he will need for school work (observation,

creativity, perseverence). Manipulations (1) prepare him to combine letters and words in order to formulate ideas; play situations (quantification, ordering, pairing games (2)) are preparation for mathematics and mathematical operations.

I'm heavier...
Why ?

Role of the adult: adults should furnish children with an abundant material enabling them to experiment. They should not be given permanent access to all playthings, for they do not know what to choose, go from one to another without any benefit, and lose interest. The rediscovery of a toy he has not seen for awhile is a great pleasure for a child.

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(1) Manipulations (classing objects from left to right, arranging pictures in order to constitute an action, etc.).

(2) Pairing games aim at finding a connection between two similar or complementary objects (head and hat, foot and shoe, etc.).

We're building too... just like grown-ups

Playthings should be given in small number, and the adult must know how to withdraw them when the child's interest begins to decline, and to return them later if they are still appropriate to his level of development (very simple puzzles are of little interest to a child who is able to do very complicated ones). In the meantime, the playthings will have been replaced by others which, in turn, will be put aside.

The simplest playthings, be they puzzles or building games, should be given before the more complicated ones. The child should be introduced to difficulties progressively: his first blocks will be far larger than those he will be given later. The child's interest should be constantly maintained by a renewal of the objects at his disposal. Construction games should not offer a single possibility, such as building a house or a truck; on the contrary, they should encourage the child's imagination, so that he may build whatever the materials suggest to him. On the other hand, the playthings should not offer an overabundance of possibilities, for these would not all be used. The aim of one game may be to class shapes from the smallest to the largest, from the thinnest to the thickest, from the darkest to the lightest, but not to do all three at once.

The adult should take interest in the child's creations, his successes and failures, while allowing him to play freely. A verbal expression of his actions should be encouraged, for his logical thought process develops along with language (transition from sensori-motor intelligence to symbolic thought). The child must learn to respect and tidy away his playthings: tidying is a game that corresponds to the child's need for order.

The adult enables the child to exercise all of his mental possibilities and to progress in his evolution through the constant creation of play situations of gradually increasing difficulty.

We play
at filling things up
and emptying them...
We learn
about volumes
and quantities

Play and playthings contributing to the cognitive development of the preschool-age child

a) Play and playthings contributing to the elaboration of concepts:

1. *As many objects as possible*, recognition and classing of colours, shapes, sizes: estimation of volumes, weights, proportions.

2. *Pictures, books, photos.*

b) Play improving spatio-temporal organization:

The child's space is a closed (topological) one before it becomes geometric. He should be allowed to structure his space by the manipulation of boxes (open or closed), by filling them with water or sand, emptying them, transferring earth from one to another, playing with a nest of objects (1), stringing, pearls on laces, rolling or sliding objects over a distance (tracks, traced labyrinths).

c) Play enabling analysis and synthesis: repertorying objects and establishing their qualities by comparing them: sorting games, classifications, all sorts of boards for embedding things, nests of objects, construction games, puzzles, lottos, all games progressing from the simple to the complex. Functional analysis is added to sensory analysis: games of reconstitution, mounting and dismounting an object, construction games, arrangement activities (playing at making things, where the child assembles and combines objects, changes and transforms objects, creates other ones: construction games, games of assembling on sticks, nests of objects, bolting, reconstitution.

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(1) Fitting into each other.

Now I've discovered the solution

d) Play facilitating access to logic:

— quantification and ordering games (car garages, farms with animals, corks, shells, seeds...),

— pairing games (simple but logical relations), connections between objects, series of objects.

Socio-affective development

The child's personality is hesitating, it attempts to master itself and to master objects. The child is able to assert himself and to discover himself through the positive results of his

play. At an early age he begins to face up to difficulties and risks (he climbs as high as possible). Fear and the overcoming of fear are most enjoyable experiences (on a swing, he asks to be pushed very hard, to go very high, he is frightened when he is up high, but asks to do it again).

Functional games evolve towards "games of prowess", in which the child tests himself. He makes internal comparisons, tries to run as fast as possible, to shout as loud as he can.

As the child becomes increasingly socialized, the games of prowess also evolve. The first aspect of socialization is an appeal to another person, first to satisfy a desire or a need. (The child asks the adult to repair a broken toy, to open a box whose cover is stuck on).

Before the age of four, the child does not like to play alone, but is incapable of playing with others, so he contents himself with playing alongside of others. When playing at games of prowess, he compares himself with the others, but does not carry his comparison to its conclusion, for the pleasure of the action prevails.

Towards the age of four, the child begins to be able to use objects in common with other children, but this does not imply sharing them, playing together or in competition, it is only a tolerance of others, and a degree of curiosity. The child's desire to assert himself will lead him to impose arbitrary rules on himself. Every child invents his own, and obeys them. The rules are simple: walking with your hands on your head, covering some itinerary on one foot... They prepare the child for his first collective games, provide him with an approach to group discipline, facilitating his integration in child society. (Participation in a round dance means that all children must respect the rhythm of the song, and pay attention to the playmates on one's right and left. A nice round dance is the result of a group that gets along well together).

Role of the adult: the child needs stimulation and encouragement in order to undertake an activity or to finish it. He is in security when an adult is present, and is encouraged to act by a permissive attitude. The child imitates the adult's attitude, and the latter may either slow him down or stimulate him. If the socialization of the preschool-age child is to be favoured, while his individualism is taken into consideration, he must be given both individual and collective materials. Play situations for two, three or more, and collective activities must be induced and multiplied. It is necessary to observe groups of children in order to discover the "leaders" and make sure that they do not "crush" the others. More timid children should be detected, and their integration facilitated. Play must remain play, and not become forced: this is why the performances demanded of the child should remain within his possibilities.

Play and playthings stimulating the social and emotional development of the preschool-age child.

a) Play and activities whose successful accomplishment gives the child a feeling of value, all sensori-motor games.

b) Daily life activities: dressing, lacing one's shoes, washing the dishes, doing a service by carrying a fragile object, being in charge of a younger child, an animal, a plant, etc.

c) Play in which the child rediscovers the undisturbed rhythm of intra-uterine life: respiratory rhythm, heartbeat, corresponding to his need for order and security: swings, nanny games, nursery rhymes, hand games.

d) Objects whose permanent presence is comforting: bits of blanket, teddy bear, stuffed animals, dolls, etc.

e) All sorts of collective games, and especially: round dances, dancing and singing games (braiding games) (1), trains, etc.

B. THE SYMBOLIC FORM OF PLAY

The symbolic form of play is a sign of the acquiring of the semiotic function, introducing the child to symbolic activity through the understanding and the use of signs, pictures and symbols. The semiotic function opens access to language, a major force in the child's play and in the development of conceptual thought. We have already encoutered this problem in the evolution of play in its sensori-motor form.

The evolution of symbolic play

Symbolic play is at its height from ages two-three to five-six. It is the fulfillment of child play, and the essential form of play in the child's life. It transforms reality by its more or less pure assimilation to the needs of the ego. At first the child sees things as he wishes them to be, they are neither perceived nor used as an adult would. All objects may become playthings, then: they become symbols. The same object may symbolize a person or another object depending on the needs of the game: a table becomes a boat or a house, a piece of wood is a musical instrument, etc. The symbols used by the child in play are personal, at first.

At the age of three, the child begins to seek out objects as auxiliaries to his personality, and his personality extends to the objects he appropriates. He wants them to be permanent and to dispose of them (infantile animism). The imagination shown in this type of play is important; the child lives in irreality. In this way he adjusts to the world by assimilating it to his desires and dreams, and not to the requirements of reality. Only towards the age of five does he distinguish the real from the unreal. The unreal seems preferable to him, for his "ego" is fully master there. He goes easily from one world to the other, however.

This symbolism, a direct product of infantile egocentricity, rapidly turns to imitation. Resemblance between the object and its representation is not important, at first, but the child gradually develops a need for greater likehood and ingenuity in representation; he then compels himself to achieve greater conformity between the object he creates or uses and the equivalent which he seeks to present. (A small child is content with a piece of bark, which he floats as a boat, whereas a twelve year-old wants a model boat with all the details of a real one).

---

(1) Braiding games are singing games played by two people. The two partners are face to face or side by side, and hold hands. The left hand of one partner holds the left hand of the other one, and the right hand holds the right hand. Thus, the hands are crossed: they are braided.

Imitation is very simple, at the beginning: it is the elementary "make believe" we observe towards the age of two. The child first imitates his own movements: he pretends to sleep, to eat. Next he imitates other people (his mother, above all). Between the ages of two and four the child begins to play at differed imitation games: he learns to imitate the activities of people who are out of sight (mother, doctor, shopkeeper, teacher), then some special "objects" such as a car or an airplane. Play becomes imaginative play based on real-life situations, constantly enriched by the child's experiences as his vision of the world extends further out (tales, stories, events...). When experience lacks, the imagination takes over. Fiction and observation are constantly alternating.

We have a bus too

The child first plays with objects whose role is passive (he rocks a doll), then active (the doll is given a mirror so that she may see herself). Symbolic play, like sensori-motor play is a solitary experience at first, then the gregarious instinct changes it into parallel play: children play side by side. At its height it becomes collective play, and cooperation comes into being. The children play scenes, distribute the roles, coordinate their actions in view of a definite objective (towards age six-seven).

Contribution of symbolic play to the various stages of development of the preschool-age child.

Sensori-motor development:

Symbolic play motivates action and leads the child to perfect his movements and coordinations. Imitation, formerly linked with identification, tends towards aesthetic behaviour.

Cognitive development: (cf. contribution of sensori-motor play)

We cannot separate the symbolic phase of play from the sensori-motor phase. The two are interrelated (1). "The attainments of sensori-motor intelligence are transposed to a higher level when the child is able to attribute properties to objects, making them significant and therefore evocable." No longer is symbolic play a simple manipulation of objects; it is the manipulation of symbols of "absent objects". The imitation of adults in symbolic play leads the child to identify with the adults, and to wish to acquire his or her abilities and knowledge, such as speech, writing and reading. The development of the symbolic function is oriented towards the acquisition of language (the symbolic activity par excellence). Play and language are closely related.

Social and emotional development:

In play, the child repeats recently experienced impressions. He reproduces them, imitates them, relives them. This imitation is an active process by which the child understands and masters the world and the feelings it engenders in him.

The child needs fiction to free his drives, compensate his frustrations and discharge his fears and anxieties. He translates his conflicts into play in order to free himself of them, playing out feared or desired scenes, or chasing anxiety by replaying the scene that produced it. (He plays at creating accidents, imitates the doctor and gives injections to everyone around him, etc.).

Imitation play, implying a certain identification with the model, is a way of learning to know and understand the viewpoint of other people (assimilation of others to oneself and of oneself to others), of becoming conscious of interpersonal relations.

Dolls help develop the imagination of children of both sexes. Through dolls they externalize many situations, and in some cases they many even use it as an instrument in solving such problems as the birth of a little brother or sister. Thus, in some games induced by dolls, the child, replacing the mother, explores maternal feelings or else attemps to act out his need for independence from the mother. He provides himself with what is refused

(1) Use a crayon or of any other instrument for writing is a motor pleasure at first, then the trace left is a sensory one. Through imitation, the symbolic function leads the child to wish to represent something (intention to represent). Fine motor coordination, combined with the need to communicate and the ability to interpret signs leads him to expressive drawing, followed by coding and writing.

to him, or does things he cannot do. (He decides that the doll refuses to eat what he gives her, and gives her a spanking).

In addition to the emotional role described above, symbolic play is also very important in socializing the child. Imitation requires respect for rules. It constitutes the only rule to which the child has access, as long as he is unable to go beyond the concrete model and grasp abstract instructions. In role-playing (scenes played by children), hierarchy is experienced before it is accepted: each child accepts a role, however modest, and the first group relations appear. From self-assertion, play becomes social assertion. It is in the group and through the group that the child attains a higher level of play, and acquires and expresses his self-control.

We're making bricks, just like our parents

Identification is an important, constant process. First the child identifies with his mother, then, towards age three-four, with the parent of the same sex, then a friend, an idol. The child simultaneously changes his perspective, seeks and finds his own identity, through these successive identifications. "He tries himself out" in various roles, in order to find the right one.

Children imitate social situations they have experienced or observed. Emotional relations, emotions and feelings are expressed in their play, but social values are transmitted by it as well ("you must", "it's forbidden", "you may"), as are proper manners.

Play contributes to the development of a system of representations and values which prepare the child for his integration in the human environment and the physical world.

Role of the adult: the adult should nourish the child's imagination and provide him with numerous opportunities to expand his field of knowledge. The games and playthings furnished should not be overly objective, so as to leave room for the child's imagination: a garage is only a garage, whereas a shelter may be a garage, a doll-house, a farm, etc. The child must impose himself on the object rather than the object on the child.

The adult should give the child opportunities for social success, in order to calm the phobias and fears caused by the feeling of inferiority he has when he compares himself to adults. Marionettes and theatre play may be used to help the child experience difficult situations, in order to dedramatize them and overcome them. The adult should play with the child, and participate in his fantasies, even if the child is not taken in. This enables him to express his feelings, to externalize them in order to solve his problems. The adult should create play situations and allow them to progress without his help. He should only intervene if there is a conflict which the children cannot solve by themselves.

Play, playthings contributing to the symbolic activity of the preschool-age child.

Pictures and books corresponding to the children's cultural identity - that is, close to the realities of their own society, those with which there are familiar - as well as stories and tales belonging to their cultural heritage, feed their imagination, enrich their personal experience and stimulate their ability to use symbols.

All common objects creating life environments familiar to the child and encouraging him to act (cooking ustensils, toilette items, tools). All everyday activities are turned to play by the simple fact of imagination.

Marionettes, which encourage speech; objects for disguising oneself: costumes, masks, etc. (Plastic bags should not be given to children, they may suffocate themselves), theatre play and mimicry.

All forms of child play (cf. the sensori-motor form of play) are pretexts for symbolic play: construction games, materials for modelling, etc.

Play with dolls or with small brothers and sisters, or other children. (Dolls do not have a symbolic or emotional role only, they also help the child to discover his body scheme through the manipulations they incite).

This non-exhaustive study of play, in its sensori-motor and symbolic forms, confirms its importance for child development. Play gives life to the child: through it, he exercises his abilities, compares himself with others, constructs his intelligence and forges his personality. Play contributes to his full blossoming by respecting the totality of his personality. It is a natural activity which we must encourage and stimulate by furnishing the "media" and situations appropriate to the exploitation of all of its dimensions.

Fig. A

Fig. B

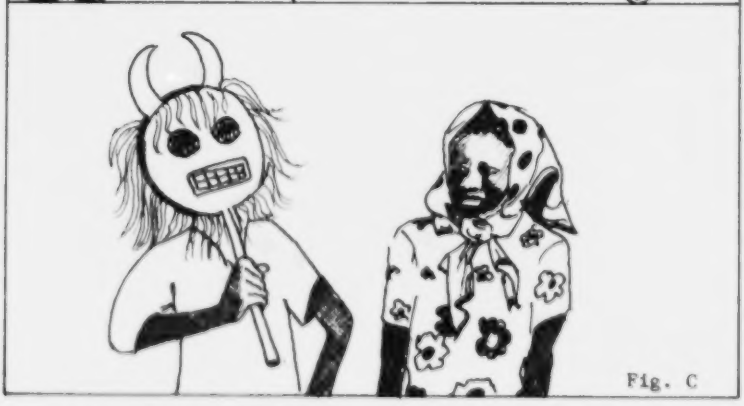

Fig. C

Fig. A : a puppet.
Fig. B : a marionette.
Fig. C : a "marotte" (rod topped by a head).

C. SOME SUGGESTIONS FOR PLAY (1)

a. Some suggestions for arranging a play area inexpensively

Salvaged material:

• old tyres from cars or trucks: they inspire many activities. The child may roll them, climb on them, go through them, jump inside them. They are turned into a house, a boat or a car, depending on the fantasy and the imagination. Several tyres form a tunnel to crawl through or a tower to hide in (fig. 1);

• cardboard boxes for wrapping, pieces of cardboard. Like tyres, boxes induce many games. They stimulate the child's imagination and creativity. They may be a theatre for marionettes, a bed, a hiding place or a construction material, depending on their size.

Pieces of cardboard are good for sliding on some slopes (natural ones, for instance), and for many kinds of busy work.

• pieces of wood, boards (be wary of splinters and nails), to build many things,

• building materials (fig. 2),

• tins (non-cutting) for building and handy work (fig. 3),

• plastic bottles filled with earth or sand for making paths.

b. Some kinds of outdoor play

• For acquiring balance, for climbing:

- a tree trunk placed on the ground in a stable position (or a beam) is suitable for maintaining one's balance standing up or on all fours, crawling, jumping, climbing over it...

- stilts made of tins (fig. 3), pieces of wood (fig. 4), solid forked branches (fig. 5);

- stable ladders of all sorts (metal, wooden, rope, etc.) (fig. 6, 7, 8, 10);

- hills of earth or sand,

- small earthen walls with openings for placing one's feet and holding on, or wooden constructions,

- a tree in which props are placed as footholds and for grasping,

- volumes for climbing (blocks, parallelipeds, spheres, all shapes, etc.) (fig. 9 and 11).

• For walking or running:

- any plaything that rolls (sleighs, waggons, wheelbarrows), things on which the child can mount and be moved (by himself or by others.) (fig. 12, 13, 17, 18); sorts of stools on wheels which will be seats, but also horses, cars...

- For crawling:

- tunnels made of tyres,

- tunnels made of logs, metal or wood arches.

- For jumping:

- ropes, obstacles.

- For sliding:

- cardboard on a slope,

- toboggans: a smooth board placed at an angle on any support (fig. 14, 15, 16).

- For swinging: (fig. 19, 20, 21)

- *attention:* swings resembling the one in figure 21 should not be too high (1): they are dangerous if the child is not fastened or maintained by some type of safety system.

c. Some kinds of indoor play easily arranged with wood or metal (be wary of cutting edges).

Nests of objects

- to made of wood or metal (fig. 22).

Boxes for embedding shapes (made of wood) (fig. 23 and 24).

Construction games (made of wood) (fig. 25).

Arrangement games (made of wood).

- the elements are the same as for construction games, but they are perforated, with extra sticks for linking the elements together.

- for hitting, screwing:

- see figures 26 and 27,

- gears to be made of wood,

- large, used screws,

- for stringing: (fig. 28, 29, 30).

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(1) When the swing is at rest (with the bar parallel to the ground), the distance between the bar and the ground should not exceed the length of the legs of the children who use it.

Fig. 1

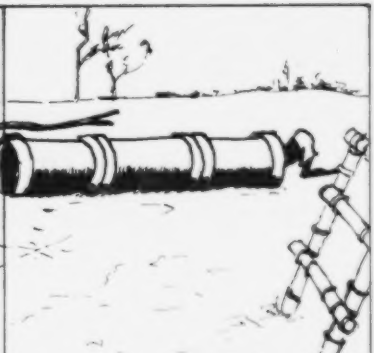


Fig. 2

Fig. 3

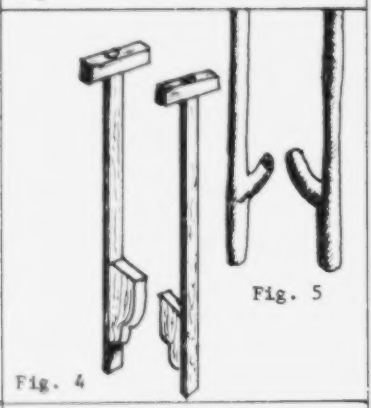


Fig. 4

Fig. 5

Fig. 6

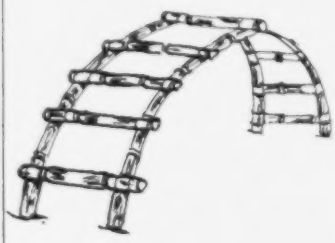


Fig. 7

Fig. 8

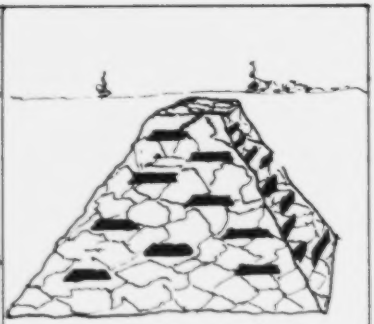


Fig. 9

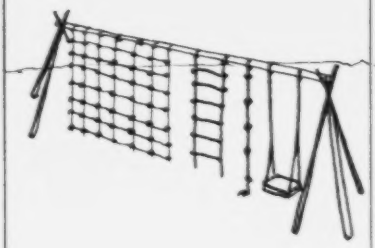


Fig. 10

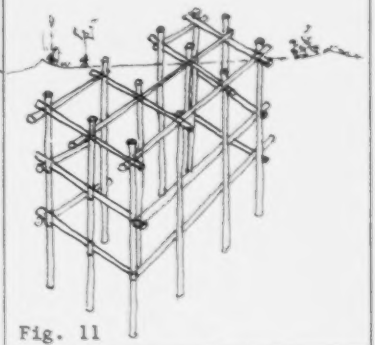


Fig. 11

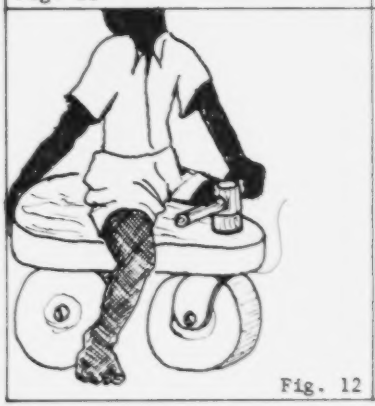


Fig. 12

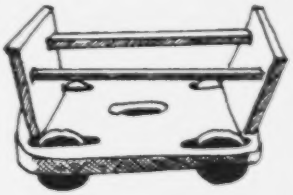


Fig. 13

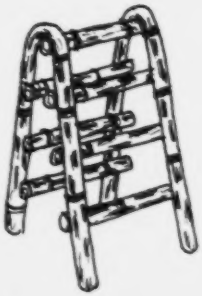


Fig. 14

Fig. 16

Fig. 15

Fig. 17

Fig. 18

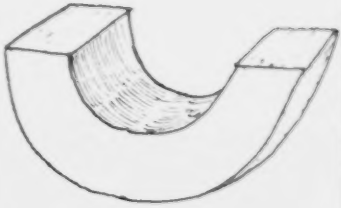


Fig. 19

Fig. 20

Fig. 21

Fig. 22

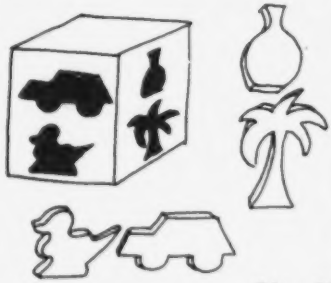


Fig. 23

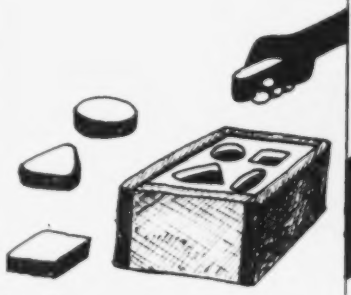


Fig. 24

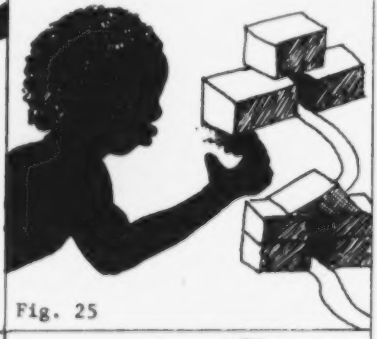


Fig. 25

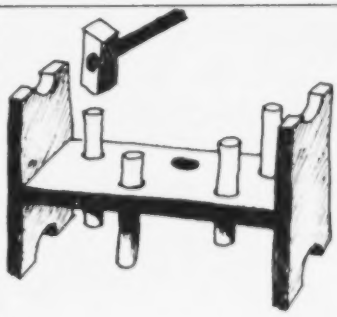


Fig. 26

Fig. 27

d. Some educational types of play:

Embedding games:

a) *in two dimensions* (fig. 31 and 32).

Construction: Take two thin boards of the same size; using a fretsaw, cut shapes in one board; glue the cut-out board on to the intact board. The cut-up shapes are the objects to be embedded (this is why they must be cut out very carefully, and strictly perpendicular to the surface of the board).

Themes:

- shapes to be classed from the smallest to the largest (three elements for the youngest children, five or more when the children master the game with three elements),
- shapes that go together (geometric or other shapes, elements of a landscape, familiar objects...),
- colours that go together, colours to be classified from the lightest to the darkest,
- directions to be respected: pairing people or animals with respect to their positions (right arm raised, left arm raised, tail to the right, tail to the left), pairing identical objects placed differently (cup right side up, cup upside down, tail to the right, tail to the left).

b) *in volume* (fig. 33)

Puzzles: same constructions as the embedding games, but the shapes are cut up into several parts (the shape of a fish is cut out then divided into two parts - (fig. 34 and 35).

a) *in two dimensions*

The first puzzles are very simple: only two parts to begin with. To avoid making overly small pieces which may be broken or lost, some details are drawn onto the board out of which the pieces are cut, and this board is then glued onto the intact board (fig. 34, the barbel of the fish). Figure 34 is an embedded puzzle: a mixture of a puzzle and of embedding.

Puzzles are made of an increasing number of pieces (3, 5 pieces or more).

Puzzles may be made of children's drawings, reproduced and cut out of rather thick cardboard, but these are not as solid as wooden puzzles.

b) *in volume* (fig. 36).

Illustration of puzzles:

- scenes of everyday life (the family, the market, a visit to the doctor...),
- familiar landscapes,
- scenes from popular tales and stories,
- animals, flowers, fruit, people....

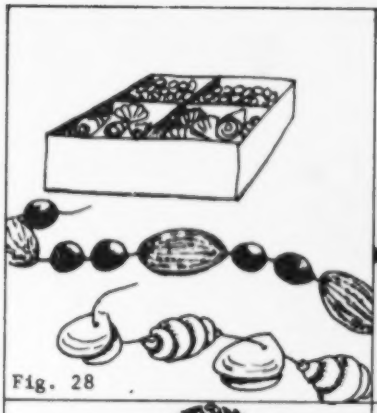


Fig. 28

Fig. 29

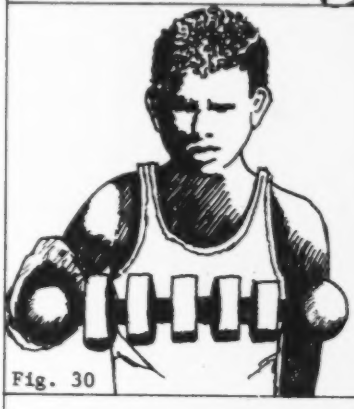


Fig. 30

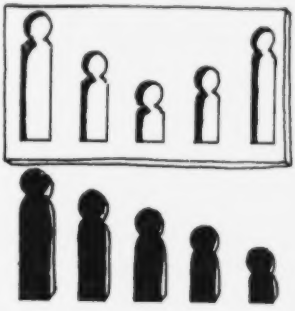


Fig. 31

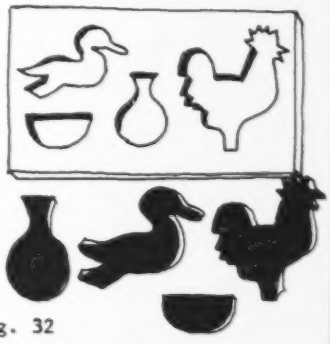


Fig. 32

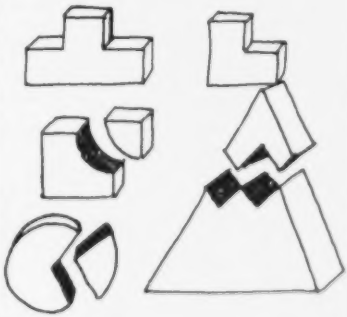
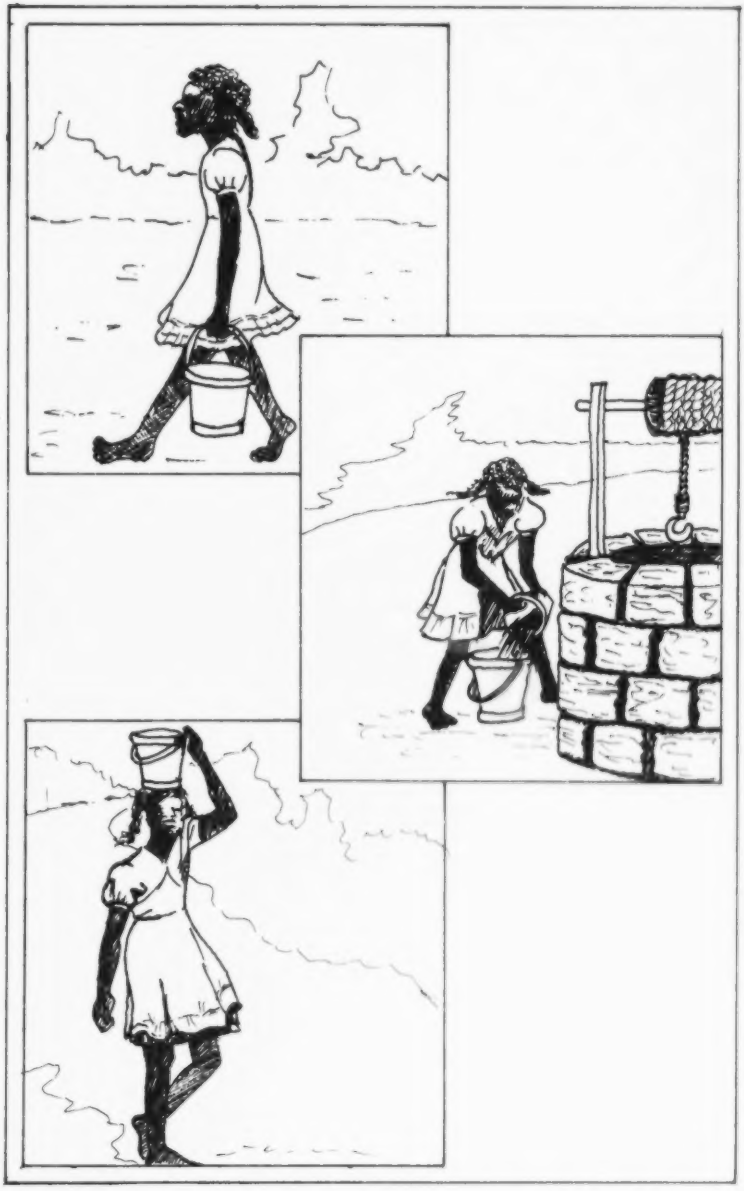


Fig. 33



A SEQUENTIAL SERIES OF PICTURES

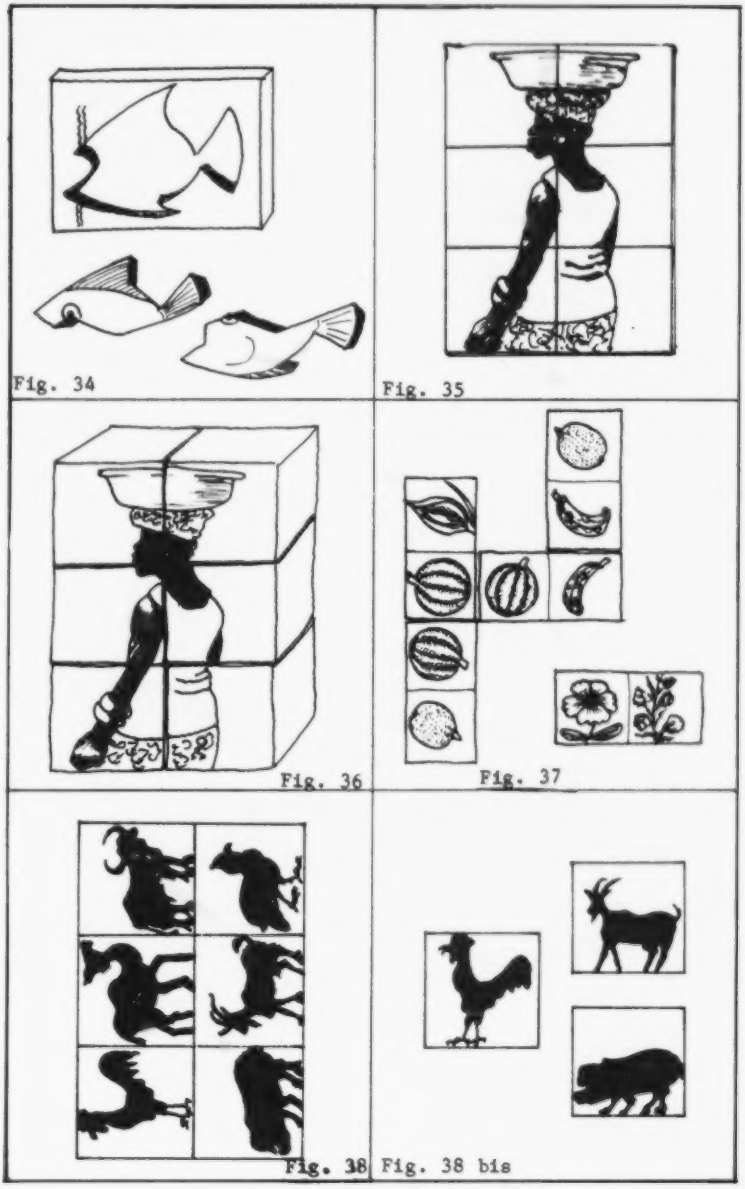


Fig. 34

Fig. 35

Fig. 36

Fig. 37

Fig. 38

Fig. 38 bis

Dominoes: (fig. 37)

Games of finding direct connections (colours, shapes, objects...) to be made of strong cardboard or wood (1).

Themes:

- geometric shapes,
- other shapes,
- colours,
- sizes,
- colours and sizes (but do not add too many difficulties).

Lottos: (fig. 38 and 38 bis).

Themes: (cf. puzzles and dominoes).

(1) Wood games and toys are evidently longer lasting than those made of cardboard. Wood may be economized by using cardboard for these parts of the plaything which are rarely handled, such as the base of embedding games and puzzles, while the rest is made of wood. This solution furnishes more material at a lower cost.

We dance and celebrate... Our parents are here too

2. THE CHILD AND THE DEVELOPMENT OF COMMUNICATION

A. THE FIRST MODES OF COMMUNICATION

Communication with others, network of exchanges and *relationships* which the infant establishes with those around him, is the most decisive element in his development.

The infant uses quite varied and sometimes surprising means of communication in his relations with his mother and his close family environment, and especially in the mother-child relationship. The exchange of impressions and information between mother and child is not limited to the classical means of communications between people: the senses and language.

The child is highly sensitive to the mother's emotional state, for instance: he feels calm and secure when she herself is serene and peaceful, and shows signs of anxiety as early as the first weeks of life if his mother is worried or tense.

"Skin to skin" *physical contact* between mother and infant is an important means of communication. In many traditional communities this contact is still highly valued, while western societies are now rediscovering it. Carrying the baby on her back, prolonged breast feeding, sleeping with the baby, massages and caresses are the main expressions of this.

Gestures are of great importance, and the smile is used at a very early age to signify a state of satisfaction. General agitation may express joy or insatisfaction. Gesticulative language is complete at twelve months; it imitates the adult's movements and constitutes an effective means of exchange (clap hands, "send a kiss", hold out the arms, point a finger, "thank you", "goodbye", etc.).

Mimicry is a particularly rich means of expression, and it progresses constantly. A human face or emotional tone of a known voice produces an intentional smile on the face of a one to two month-old. At three months the baby recognizes a face. At five months he distinguishes an angry expression from a happy one. A friendly face is distinguished from an unknown one at six to eight months. At eight months the baby identifies his mother's face as different from others. From then on his expression shows signs of the fear caused by strange faces. Only at the age of one, approximately, does the child's expression voluntarily or unvoluntarily show his emotional state.

What the mother first took for a smile, that is, the sign of satisfaction or pleasure, was only a reflex in a baby whose stomach is full. Her interpretation of this essentially physiological manifestation is adopted by the child, who makes it his own. The reflex expression becomes an expression directed towards others, and a means of communication. The child has discovered the code for which his mother furnished the key, and he then goes on to use it.

B. SPOKEN LANGUAGE

Spoken language is of course the principal means of social communication. As speech develops it replaces gestures and mimicry, which only enable restricted exchanges.

In this text we will study the evolution of the child's language and its effects on his cognitive and socio-affective (speech and communication) development, since the child's personality is a global entity.

Spoken language progresses through two phases: a prelinguistic phase in which spontaneity prevails, then a linguistic phase, more controlled, during which the child assimilates the elements of the language and the way to arrange them in a significant manner.

a. The prelinguistic phase

The *prelinguistic phase* is characterized by vocal exercises accompanied by movements (babbling, vocalizations, onomatopoeias...). At first they simply produce a motor pleasure and are not submitted to a sensory regulation (even deaf children produce them). Links are gradually established between the auditory sensations and the vocal productions: once the child has become sensitive to speech he "talks" even more when spoken to. Through imitation he begins to differentiate the phonemes (1) of his language, and to reproduce them. He discovers that there is a meaning to certain sounds that he recognizes and can pronounce, and that are associated with some definite situations, objects and actions in a stable manner. He becomes aware of a causal relationship between some of his utterances and certain acts. This phase involves the understanding of language: it precedes and triggers its use.

Socio-affective development

Language is a playful activity which is most pleasureful for the child. The first intentional signs of communication are born when the child becomes aware of the relationship between sounds and the act they induce. They are linked with the needs of the child: need for food, desire to have an object, or simply the need for a presence. The first vocal means of communication is crying.

Cognitive development

The prelinguistic phase corresponds to the stage of sensori-motor intelligence. The child plays with his speech organs, and coordinates his muscular, vibratory and auditory sensations. He imitates adults, repeats phonemes, then some words: he pronounces the word in the presence of the object, and establishes linguistic patterns.

Role of the adult. All of the linguistic attainments of the child from birth on are conditioned by adults. Language development is closely related with the environment in which the child lives. The possibility of learning to speak is linked with the number of hours of listening and the desire for communication.

The desire to communicate with the environment depends on the quality of the child's relational life with his mother, whose influence during the first months is particularly decisive. The child's speech is structured by his emotional situation. The child lives in the present moment. If his vocal activities are not in resonance with the adult's response he loses the desire to communicate, and no longer sees the need to do so.

The mother tongue is mostly learned with the mother and through daily experience by impregnation and imitation.

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(1) The phoneme is the smallest significant vocal unit of language. The words house and mouse, for instance, are differentiated by the sounds [h] and [m]. [h] and [m] are phonemes. The French-language contains 36 phonemes, while English has many more. Phonemes, and their number, vary from one language to another.

In order to reproduce sounds correctly the child must hear well, and he must perceive the various phonemes directly. His own utterings are vague, and contain more phonemes than those contained in his mother tongue. The adult interprets them and repeats them in the form of phonemes. A clear pronunciation enables the child to discriminate between them and to repeat them in order to learn them.

The same situations must occur often if they are to serve as reference points, and if relations are to established between sounds and actions. All daily life situations, those linked with care of the child, those which are repeated every day (toilette, meals, walks) should be verbalized, familiar objects named, starting at a very early age, even if the child does not yet understand.

Adults must tell stories, sing songs, say nursery rhymes, play at hand games, nanny games, auditory games, teach how to make and hear sounds. This all refines perception.

Through the movements which go with them, nursery rhymes tend to set articulation sequences. This may be particularly important if the small child has difficulty in articulating, often due to muscular awkwardness which disappears with exercise.

b. The linguistic phase

The linguistic phase represents the accession so speech, and its conquest. It begins with the first significant words, towards the end of the first year, and never ends, for all spoken languages are constantly changing (new words, variations in the meaning of words with use, etc.).

The first linguistic manifestations are syncretic in nature: they are single words or "word-sentences" used by the child to express his desires, emotions or findings, indistinctly. They are linked with events of daily life, felt or experienced situations. No distinction is made between the act and the object. The name of the object is used to designate several actions related to it. The word "bread" for instance, may mean both "I want some bread" and "I am eating some bread". Only if we see their context can we understand these word-sentences, since the child contributes to their meaning by his positions, mimicry, gestures or tone. He learns language through situations, and acts are an indispensable part of it: gaps in vocabulary are filled by tone and gestures. Gesturing actually regresses as speech becomes richer.

The child knows some two hundred fifty words at the age of two. He understands more words than he can use. Nouns are learned first, followed by verbs.

During the same period, the child goes from the word-sentence to the sentence. The assembling of two words is the first step towards the sentence. At first words are simply juxtaposed, then small, complete sentences appear. The child knows how to respond to some simple verbal orders. He uses the third person when speaking of himself: "baby drink" means "I want to drink".

The appearance of the sentence is an important point, for it indicates the beginning of the organization of the spoken chain (1), linked with the acquisition of the first linguistic structures.

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(1) The spoken chain is the succession, in time, of the linguistic signs constituting a message. If this chain is not organized the message loses its meaning, or takes an another one. For example: "I have dress pretty" is meaningless; a general secretary is not a secretary general, a robe is not a bore. This organization has rules that apply to it.

Language is not the sum of elements placed side by side in any which way. Each word takes part of its meaning from those around it. From then on, the child progresses on two levels: that of vocabulary (or lexicon) and that of sentence construction (or syntax).

The vocabulary is quantitatively and qualitatively enriched. Before age two, the child does not know enough words to express the diversity and complexity of situations. He extends the meaning of words: the same name is given to different objects (all men are "daddy", all animals "bow wow", for instance). As he increases his vocabulary he gives a more precise, subtle meaning to words: "bow wow" become "dog", "cat", "chicken", then much later dogs will be "setter", "poodle" or "spaniel".

The organization of the spoken chain by the gradual learning of the syntactic structures is made possible by the imitation of adults (1). This imitation is not passive, it is a creation by analogy, ignorant of exceptions and special cases: the child says "you is" as he would say "baby is", "mummy's dress and me's dress, etc.".

At the age of three the child makes sentences (he is retarded if he does not). Until then he only used nouns and verbs, now he uses adjectives, then adverbs, pronouns and propositions. The acquisition of adverbs and of personal pronouns is very important. These "grammatical" words link words together and determine the meaning of the sentence. The child asks questions, shows a tendency to conceptualize, creates words (by analogy) when the situation requires it: the repaired toy is "unbroken" (implying "no longer broken"), uses the word "I". He expresses himself with greater ease. Spoken action begins to replace action; the child uses words as an instrument of thought.

Between three and four, the child makes complex sentences, but with a simple proposition.

At age four, he knows some two thousand words, and his speech is formed. At five he speaks distinctly, can tell a long story. Simple sentences are juxtaposed at first, then conjunctions appear.

At this point the child possesses all the rudiments of spoken language: he has attained linguistic competence. The use of this competence is performance (2); it enables him to enunciate and understand an infinite number of sentences in his mother tongue.

The linguistic phase and socio-affective development

At first the child uses the third person to refer to himself, for he does not identify himself. Through language he discovers himself, and discovers others. The child's self awareness takes the form of the use of "I" instead of the 3rd person.

This use of "I" corresponds to the child's personality crisis, or opposition crisis (towards the age of 4). "I" and "no" are used by the child for self-assertion. In conquering speech, he is able to test out his independence, and his power over others.

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(1) The rules underlying the organization of the spoken chain are:
— the order of the constituent elements, so that the message is significant;
— the modification of some of these elements so that they furnish precise information (tense of verbs: "I sleep" and "I was sleeping" do not mean the same thing). Mouse becomes mice when there are several of them.

(2) For a given competence, performance shows individual variations.

Speech does not have a social function at first: it is a monologue. The child talks to reinforce an action or to replace it. He comments what he sees or what he is doing.

The person spoken to becomes a pretext for speaking, and plays the role of a stimulant. Children speak spontaneously when other children are present, but there is not really any dialogue. As in parallel playing, the "collective monologue" exists: each child expresses himself, comments his actions, occasionally asks questions but does not expect an answer.

Gradually, however, speech contributes to the socialization of the child. It creates relations with others. To make himself understood, the child must use words which everyone understands. His exchanges with those around him make him aware of the subjective nature of his thoughts; he gradually loses his initial egocentricity and gains access to objectivity. He discovers the existence of "rules", which he applies strictly, allowing for no exceptions ("mouses", "tooths", "he go" and "you am angry" !).

The acquisition of syntactic structures is the application of the freely consented rule. As communication with other people increases, progress in speech becomes more rapid, and vice-versa. The greater the child's ability to express himself, the greater are his possibilities for contact with his environment.

The child learns his culture while learning his language: all ideas and behaviour are linked with linguistic signs.

It is through language that culture is transmitted from one generation to another, from one society to another.

The linguistic phase and cognitive development

The development of symbolic thought is mostly seen in language. Verbal patterns are halfway between the patterns of sensori-motor intelligence and conceptual patterns. They are not concepts. They are one element characteristic of concepts: *communication by verbal phenomena putting them in relation with others*, but they are subjective, linked with the context and are not generalizable.

Their meaning varies from one moment to another, and is not tied to a definite class of objects. "Gone" means that someone is gone, that an object has disappeared or that the light has gone out, for example. This extension of the meaning of words is characteristic of a global perception and of the child's insufficient discrimination. When the word ceases to accompagny an act and is able to reconstitute a past action or to attempt to represent it, it begins to function as a sign; that is, not as a simple part of an act, but as an evocation of it. "At this point the verbal pattern separates itself from the sensori-motor pattern, and the child gains access to the symbolic function" (beginning of "what's that"?).

By its use in different situations and contexts, the verbal pattern then moves from the field of perception to the field of conception. (cf. the symbolic form of play).

The child is then able to represent an object in its absence: he creates mental pictures enabling him to take his distance from action, and gain access to concepts.

Speech contributes to a better organization of perceptions: sensations become objects (it is round, it is orange, it smells good: it is an orange). Manipulations lead the child to "label" objects.

If thought is to be expressed, externalized, if it is to exist, it needs a language. The child speaks to make himself understood, to say something. Speech and thought are closely interlocked. The child structures his language by thought, and language structures his thought. The internalization of speech corresponds to the development of thought.

Language is not the source of logic, but it is structured by it: the child constructs his language by analogy, in the case of words, sentence structure, conjugation: "It's a nelephant", "I eat", and "I eated", etc.

He expresses his logic through language: "How can your voice be a horse?" (hoarse).

Some notions are acquired through language, associated with movements and action:

1. the notion of time: "before", "after", "first", "now",

2. the notion of "space": "here", "there", "over there",

3. the notion of a link: "because",

4. the notion of the body scheme: by understanding and using words designating parts of the body, the child becomes conscious of his body scheme.

5. the mathematical notions: add (addition), take away (substraction), another one, another one (multiplication), cut (division).

At first, some words are used any which way. Later the child uses them properly, when he understands them. ("Tomorrow I was sick" says the child who does not know the difference between yesterday and tomorrow. Later, the same child will say "you go to bed and you get up and it is tomorrow").

Once these notions have been acquired, thanks to language, they enrich the latter and make it more precise.

His access to the symbolic function also leads the child to express himself graphically. Graphism and language are linked: speech compensates a lack of motor skill. The child's comments express what he was unable to communicate in his drawing.

The child's representations are source of language. He draws what he feels, then explains it in words.

Role of the adult. It is the adult who gives a meaning to the child's verbal productions. The word "da-da-da" (sound play) becomes the word "daddy". This interpretation suggests to the child the existence of a verbal code, and the desire to communicate by using it. As soon as the child becomes conscious of this code, he must be given the elements he needs in order to learn it, and the situations requiring its use (possibilities of communication and expression, for the code goes in two directions).

The adult is both the model and the stimulus. "Baby talk", used by some adults and, by imitation, by other children in contact with the baby who is learning to speak, does not facilitate communication. It hampers the verbal progress of the child and restricts his possibilities of communication, for he is only understood by those around him.

One should use adult language with children, while taking care not to confine one's speech to the syntactic structures of the written code. One should not cut words up into separate syllables. Never will the child hear them pronouced in that way. In order to facilitate verbal exchanges, all of the child's speech should be accepted, but not imitated. He can be brought to more structured language by the repetition of his message in a clear, simple language. Often the sentences pronounced by a child are hardly begun, unfinished if the other person seems to understand. One must be aware of this (some children do not speak because their needs are filled before have the time to express them). The child must be allowed to express his needs and desires, he must be placed in situations where he must transmit as well as receive messages and information. The adult should ask questions of the child, so that he in turn may ask others. The way in which the adult answers conditions the child's attitude: he either continues to ask questions or becomes mute.

Children only understand explanations if they are related to their experience (it is useless to say "it is white as snow" to a child who has never seen snow).

Some situations provide an opportunity for exchanges (shared materials or play, play situations: theatre play, symbolic play, marionettes). They should be induced and multiplied.

There is often a difference between the childish language, that is, the language the child uses as a means of communication at home, and that used in the care structures for preschool-age children (nursery schools, kindergartens, day care centres...). This difference may involve both the quality and the quantity of words used (we then speak of a difference in speech level) (1).

Some children speak a very imprecise language, for they have never had an opportunity to learn anything else, and do not know any other language. They need help if they are to gain access to a correct, structured manner of speaking, which is necessary for schoolwork.

The language used by the child in his family environment may be in definite conflict with that used in the educational environment in which the child is placed, and with the experiences acquired there. The result may be a real block. Here we encounter the problem of the use of the mother tongue and of the official language in preschool educational establishments of multilingual countries, and of the schooling of immigrant children in the language of the host country.

Whenever possible, it is preferable to use their mother tongue when providing education to small children, and to continue to teach in that language until the child has learned to read and write. Proper knowledge of the mother tongue is an excellent foundation for learning a second language. In addition, experience shows that when the mother tongue is totaly neglected during the preschool years and schooling occurs in the second language, the children are poor achievers, aside from the fact that they run the risk of never thoroughly possessing any of these languages.

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(1) Speech level varies from one socio-cultural environment to another. The same person uses different speech levels depending on who he is addressing and the circumstances in which he speaks. (A doctor does not use the same language with his colleagues and with his patients. He expresses himself differently in a lecture and in a family celebration).

c. Some educational techniques (cf. child development and play)

The educational action of adults should neither force the child nor constitute an obstacle to communication, be it on the level of pronunciation, the lexicon, syntax or thought construction. The child should not be tired by having to repeat a word he is unable to pronounce: it should be "translated" for him and repeated so that he hears it clearly. (The child says: "it's a woll". The adult answers, "yes, it's a roll", "it's a big roll, a big, round roll"). One should not dwell on this at the moment, but the exercises should be repeated, seeking other words containing the same sound placed in different parts of the word. The difficulties in articulation are not the same for a sound placed at the beginning or at the end of a word.

Song, nursery rhymes and hand games are sources of non-coercitive repetitions, for the child requests them. They maintain his interest.

The child's everyday reality should be used to create and consolidate concepts: naming the objects around one, putting actions into words (I dress, I get up, I play, etc.) (cf. development and play).

Vocabulary takes root in the use of words. The child should learn commonly used words in familiar situations, so that he will be able to re-use them. They must be pronounced clearly, and the child should be encouraged to repeat them as often as possible in the familiar context. (Competence and performance are linked. A competence which does not lead to any performance is an unnecessary one. Performance increases competence).

The child should be encouraged to use words in various situations where they designate differing degrees of generalization: sorting, classification, etc. (all flowers, all roses).

The child does not possess the sense of the word. Adults must therefore be careful to pronounce words using all possible articles, all possible qualifying words, so that he will learn to discriminate between them, and will know where the spoken chain is cut. The child who says "a nelephant" will only learn to distinguish the word elephant if he has an opportunity to hear: "it's an elephant, it's the elephant, the big elephant, the little elephant, the elephants, etc." (Saying the "nelephant" is a normal mistake, a phase in learning to speak).

Nursery rhymes, songs, tales, round dances and dancing games lead the child to learn sentence constructions while playing. Their repetition, accompanied by movements, sets certain syntactic constructions and constitutes a true structural exercise.

An example of a nursery rhyme: "what is in my basket?", "There is straw", "and in the straw?", "There is an egg!", "And in the egg?"... etc. The child becomes familiar with the question "what is?", a difficult one but which he masters easily, and with "there is" (1). An example of a story: little red riding hood: "grandmother, what big teeth you have, etc. The better to..." Here too, the child learns constructions by repetition. Words have a magical power in stories.

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(1) A structural exercise based on the rhyme: "What is in my basket"?. The educator says: "I went to the market, what is in my basket?" The child must use the structure "there is", and add something found on the market, "there are bananas, there is a melon..." The question may vary: "What is in my house?..."

We must not forget that thought and language are closely linked. The child who speaks understands the language he uses. He must organize his thoughts in order to express them, and make an effort to translate them into sounds.

The child must be brought to express himself logically, and he must be given an idea of logical thought. One way to do this is through the logical progression of a familiar action, such as dressing. Rather than telling the child: "you put your hose on, then your shoes", it would be preferable to ask him questions so as to lead him to express himself. "What will you put on now, your hose or your shoes? You are going to put your hose on, and what next?..." The logical sequence enables the child to locate himself in time: the present time at first, then the future.

We learn nursery rhymes

Sequential pictures (pictures representing the different phases of a story or an action - cf. appendix) also help the child to locate himself in time, and to practice his logic. They must be short, at first (two pictures juxtaposed), then more and more numerous. These also contribute to the transition from the simple sentence to a more complicated one, to the use of prepositions, then conjunctions, to go from a sequence to a story. They are an excellent educational tool.

The acquisition of language is one of the effects, but also one of the most important causal factors in the child's development. It is not produced by conditioned reflexes, but by creative activity motivated by emotional life and the desire to communicate. It is closely linked with the socio-cultural context. The child's linguistic progress is inseparable from emotional and intellectual advances, once again confirming the global nature of his development.

Aside from the auditory discrimination of the specific sounds of a language and the ability to emit them, there are two absolute necessities for learning a language: the presence of other human beings and an dearly start. For experiences (1) have shown that

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(1) ITARD (1774-1838), physician, head of an institution for deaf-mutes, took in a child, some ten years old, discovered in the woods by hunters. The child, abandoned at a very early age, did not speak and was never able to learn to speak.

Two wolf-children, aged about four and eight, have been taken in. The four year-old was able to learn to speak, while this was impossible for the eight year-old.

an isolated child never learns to speak, and that the ability to learn to speak decreases as the brain development and the multiplication of the grey cells slows down, and it dies out irremediably (1).

Learning to speak should be one of the main objectives of preschool education.

C. WRITTEN LANGUAGE

Communication by graphic signs is the mode of communication the least developed in preschool-age child, for it is the most complicated one. It includes representative signs such as drawings, pictures, photographs, or abstract ones such as alphabetic writing and all graphic forms based on lines.

The socio-cultural environment in which the child lives conditions the discovery of written language and the desire to learn it. If little or no use is made of writing, and the need for it is not felt, the child will not learn it; on the contrary, if he lives in an environment where it is constantly present, he will often be sollicited and made aware of this means of communication, and this will excite his desire to possess it.

Access to written language (to alphabetical reading, in particular) begins at the child's birth. It cannot be separated from his global development. When the child is born he has within him all of the capabilities for attaining it. These capabilities may be diminished by such factors as disease, all sorts of handicaps (visual, motor, auditory, etc.), poor emotional relations, over-precocious learning which does not respect the genetic development of the child... Many tests and experiments have proved that the mental age for learning to read is somewhere around age six, and that it is useless or worse, dangerous, to start teaching if this level is not reached, that is if the child does not have all of the abilities and skills characterizing this degree of maturation.

The objective of preschool education should be to prepare the child for written language; that is, to bring him to the level of development at which he may learn the greatest number of graphic signs, and thus be able to begin learning to read the alphabet at the right time (a mental age of six). This is something he cannot do by himself. The ability to write is a necessity created by a life context in which the graphic sign is omnipresent, and not by the child's deep need, as play, in which he is fully himself.

The increasing use of visual and audio-visual means throughout the world (posters, signs, cinema, television) makes the learning of visual signs, and of pictures in particular, a necessity.

As for alphabetic writing and reading (two inseparable aspects of written language), they are the most frequent means of communication, and the basis for all school learning.

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(1) At age six, the brain has reached 90% of its development.

a. Gaining access to written language

- discovering graphic signs

Very early (towards seven months), the child is able to grasp any object which may leave a trace, but this encounter between the object grasped and the surface it touches is *purely accidental* and has no consequences.

Only towards the age of eighteen months does scribbling occur. The child notices the traces he leaves (finger going through the porridge or in the sand, depending on the circumstances). Action counts more than the result at this stage.

Slowly but surely the child *takes interest* in his graphic productions.

Between two and three, the scribbling progresses: shapes and attempts at shapes replace the "spiralling swirls" of the first period. If the adult asks the child what they represent, he interprets them, but the intention to represent is not yet present. Interpretation comes afterwards. It may be different depending on who asks the question, or on the moment at which it is asked. A same shape may have several meanings.

Between the ages of three and four, the child reaches a new stage and assigns a meaning to his drawing beforehand. His earlier experiences have brought him to an intuitive discovery. He suspects the meaning of the symbol by noticing certain similitudes between his traces and real objects.

It is at this time that he begins to imitate writing as well (if he has had an opportunity to see it done), and covers entire surfaces with regular traces which ressemble it.

Between four and six, drawings are constantly enriched, and become increasingly representative. The child draws what he knows and not what he sees: he may represent a baby in the mother's belly or a person inside a house which he represents as seen from the outside. As for writing, at age four and a half or five, the child is able to reproduce it as he would a drawing. Often he says he has drawn his name. In some socio-cultural settings, the child is able to copy graphic signs (block letters, script letters) long before he is aware of their meaning.

- from drawing to writing

Drawing enables the child to gradually learn the symbolic value of the graphic sign. The coincidence between some of his drawings and known objects leads him (with the help of an adult) to attribute some meaning to them at first, and later to have the desire to represent the same objects, to reproduce them and others, by graphic signs.

Thus, drawing helps to schematize objects, to symbolise them. At first drawing and writing progress side by side. For a long while, the fact of tracing letters is the same thing as drawing. "I drew daddy", he says, when he has imitated writing or copied the real letters of the word. Gradually, the two symbolic systems take different paths. Writing separates off from drawing, which is not conventional in nature. At first it was made of ideograms; that is, symbols of words. If later becomes phonetic signs, symbols of syllables, then of letters. Unlike drawing, it does not symbolize objects, but language.

Alphabetic writing is symbolic on two levels: the object is represented by a combination of sounds (spoken language) which, in turn, are represented by a written transcription. This double level of symbolism is almost always visible in children learning to read. At first

they read out loud, or whisper, while articulating the sounds clearly with their lips. Only later are they really able to read "silently".

The child needs spoken language, for it is a link between the object and its written representation. (Adults, too, resort to reading out loud when they are struggling with a difficult text).

- *from scribbling to the alphabetic code*

The evolution of writing is linked with the psycho-motor development of the child. Scribbling occurs along with learning to walk, the achievement of balance and the ability to grasp objects between the thumb and the forefinger. It is made possible by the coordination of vision and grasping.

At first the child traces continuous lines, for he does not have sufficient mastery of his movements. Interrupted lines, when they appear, towards the age of two, indicate a better control of movement. The orientation of the lines - downwards at first, vertical, then horizontal - is determined by neurological maturation. (Neuro-motor control first goes from the head to the feet and from the body to the fingers. The axis of the body works as a symetrical axis).

The scribbling period corresponds to the phase of sensori-motor intelligence. The child does not attribute any symbolic value to his tracings.

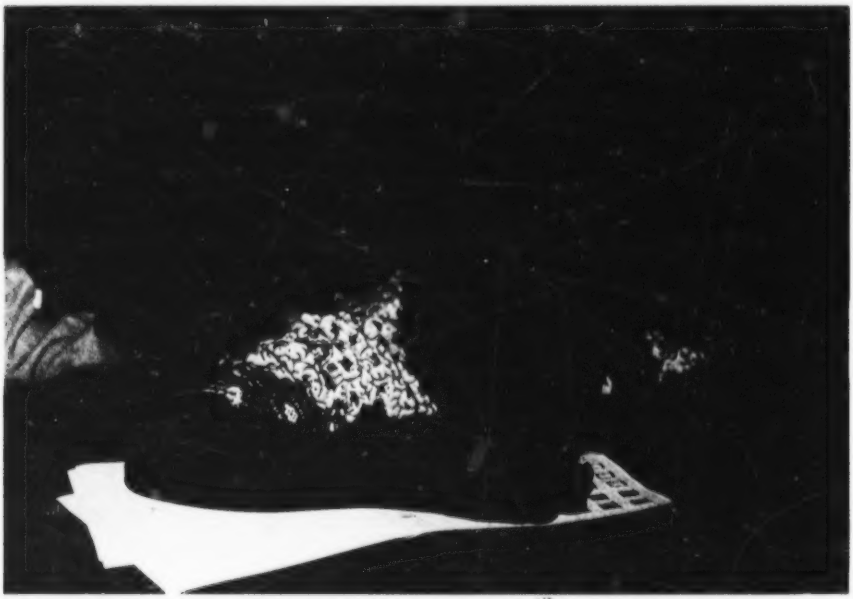
As coordination and perception improve (eye-hand coordination, in particular), and the child gains access to the symbolic function, the child proceeds to imitate writing, which he distinguishes visually from drawing. He then has an intuitive notion of the existence of abstract signs having a symbolic value, but he is not yet aware of the existence of a code. (He asks the adult to read his scribbling, and to send his "letter" to the person for whom it is written).

The two to four year-old only seeks to interpret signs when incited to do so by those around him. Signs can only be understood through initiation (some ancient writings have never been decoded). Movements take on greater assurance as they are practiced regularly: scribbling, drawing, all sorts of manual activities (cf. child development and play). At age four, the central nervous system and the sense organs have improvement of fine motoricity. This new skill, along with the development of symbolic intelligence (the development of language, in particular) leads the child to realize that a sign "signifies". He makes numerous intentional drawings, and "draws" writing towards the age four and half or five. At first he copies letters at random, then he realizes the existence of a code (provided someone helps him) and asks for a model. He then copies words globally: the resemblance between his drawing and the orignal model is more or less vague, depending on his degree of maturation.

In order to succeed in reproducing this code, he must then learn it and respect all of its requirements. The ability to draw a word does not represent a passport to writing, whose reproduction is a network of constraints, due to its conventional nature.

Contrary to drawing, a given written code is composed of signs chosen once and for all. (There are thousands of ways of drawing a house, but a handwritten "a" must always have the same shape, so as not to be confused with another letter, such as "o" for instance).

I draw...
I paint...
Tomorrow
I will write



Good visual discrimination is required in order to perceive and recognize letters; without that writing cannot be reproduced and read naturally. Certain letters only differ from others by minute details, as we have just seen (in script "o" and "a").

Well developed fine motoricity is also necessary for the exact reproduction of the contours of the letters and in order to respect their proportions (in script, the only difference between the "e" and the "l" is their height).

If they are to be meaningful, the written signs must be oriented and ordered on the written chain. The latter is the equivalent of the spoken chain (cf. spoken language). All elements (letters or words) must occupy a definite place in it, so as not to distort the sense of the message (dog and god are two different words in English; they contain the same letters, but placed differently). This is not a peculiarity of the English language, the same is true of other languages: in French, "un" means "one" while "nu" means "naked"; in Spanish, "olor" means "odor" and "loto" is a parrot. These words are made up of the same letters. Their meaning is determined by their order.

Spoken language and written language are two different systems, based on one another. There are some similarities between them: the former is a succession in time (sounds pronounced one after another), the latter is a succession in space (graphic signs reproduced one after the other).

Writing is inscribed in a two-dimensional space, and must be oriented according to the established conventions. Each type of writing has its own rules.

Thus, most alphabetic and phonetic languages are written from left to right and from top to bottom (script, or Italian hand). Others on the contrary, go from right to left and from top to bottom (Arabic, Hebrew, Chinese) (1). The downward direction of these written languages is not arbitrary; it corresponds to a practical need, the need to leave what has just been written visible, and not to erase it with the hand as one continues to write.

In turn, each element in the written chain is oriented upwards, downwards, right, left. This orientation is most important, for it sometimes is the only difference between two letters. This is the case for "u" and "n", "b" and "d", or "p" and "q" in script.

This aspect of the graphic code requires that the child be well oriented in space and time, for the latter is both order, duration and succession.

Spatial orientation is linked with the body, which is the only stable reference point when one moves. The child writes in a space whose representation is related to his own body, and which is oriented as he is: up, down, left, right and middle. The middle is an imaginary line corresponding to the vertical projection of the body (body axis). The child becomes conscious of this axis at the same time as he learns to distinguish his left from his right side; that is, towards the age of six. Only towards age ten does he fully realize the relativity of

(1) Chinese writing is neither alphabetic nor phonetic: it is partly ideographic.

this notion. This requires that the child have a good understanding of his body scheme (1); this is built up from a very early age, on the basis of sensory elements (cf. child development and play) and is constantly enriched, especially with the development of spoken language (cf. spoken language).

The conquering of the code is not limited to the ability to reproduce it. If the child is to gain access to the graphic message and enter this new mode of communication, he must rediscover spoken language through signs which, as we have seen, follow each other in an ordered universe, and can be combined. He must establish links between each of them, each of their combinations, and the sounds of the spoken language, in order to reconstitute the spoken message. In addition to the requirements linked with the ability to copy the code, synthesis, a certain degree of abstraction for going from the written transcription to the spoken translation and vice-versa, as well as a good auditory discrimination are needed for these successive operations. Just as the designs of some letters are similar, the pronunciation of some sounds is so close that a poorly attuned ear may confuse them, transforming the initial message or making it unattainable. Such is the case of [t] and [d] and [p] and [b].

When deciphering simply involves the discovery of the letter combinations and their vocal equivalences without an understanding of the written text, the code can not be said to be mastered. This mastery is only reached when the child succeeds in understanding the meaning of the message and in re-using the elements of the written code to communicate.

This presupposes a level of explicit language, and the possibility of communicating by spoken language without the help of mimics and of the gestures commonly used when a word is lacking. The latter are of no help to the child who is faced with writing and the need to decipher it.

Written language must also be as close as possible to the child's verbal language so that he can understand it. If the two are too different (cf. spoken language), the child may discover the sounds which correspond to the signs, without understanding their meaning. He then will not understand the use of knowing written language, and will not be motivated to learn it.

It is absolutely necessary for the child to wish to transmit a message and to know the meaning of a transmitted message in order for him to desire to master the written code, and to succeed in this difficult entreprise.

The slow progression from scribbling to the alphabetic code shows once again the interlocking of the various phases and of the different aspects of the child's development, the harmony of which greatly contributes to its progress.

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(1) The child's drawing indicate his mental evolution. As we have already said, the child draws what he knows and not what he sees. As the child takes possession of his body scheme, we can follow the process in his drawings of a person. Towards age three child draws what is known as a "tadpole", a sort of closed circle with two lines for the legs; towards age four the arms appear as symetric lines on either side of the head or legs, for the body is only drawn towards age five. At age six the person is entirely constituted and continues to be enriched by details.

b. Educational action

As we have just seen, the abilities required for learning written language are:

- satisfactory visual and auditory discrimination;

- well controlled fine motoricity;

- good spatio-temporal structuration linked with a well internalized body scheme;

- knowledge of spoken language (lexicon, structure, pronunciation), disengaged from gestures and mimicry and making it possible to discover the meaning of the written message;

- a degree of abstraction resulting from a well established symbolic function, so as to go from the given message to the written transcription and vice-versa (learning the meaning of a symbol);

- the ability to analyse and synthesize;

- a deep desire to communicate.

These are built up at a very early age, and contribute to the harmonious development of the child. Any pronounced incapacity in a specific field should be the object of a specific educational action before the learning of written language is approached; the latter should be retarded if all of the above-mentioned conditons are not met.

Learning to read requires a certain maturation, and when it is not reached it prevents the attainment of the objective.

Educational action at a preschool level consists of raising the child to this degree of development, and filling the gaps which may exist, so that he will have a good chance of succeeding when he starts to learn to read. It consists of preventing the deviations resulting from premature learning, deviations which are harder to correct than to avoid, and which often require prolonged remedial education (interverting of letters, confusion of letters and of sounds, lack of understanding of written language, etc.).

c. Activities and abilities to be encouraged and developed

1. All aspects of play (cf. child development and play);

2. Spoken language (cf. spoken language);

3. The development of auditory perceptions: learning to hear, to differentiate noise and sounds, to compare sounds (more or less high, more or less intense, etc.), to respond to sound signals by a specific action (stop running when you hear someone clap his hands, for instance), to differentiate the phonemes of the language so as to hear them well and thus to pronounce them well (nursery rhymes, hand games, songs);

4. The development of visual perceptions and eye-hand coordination (cf. child development and play);

5. Psycho-motor development: broad motoricity (cf. child development and play);

6. Fine motoricity (cf. child development and play);

7. The discovery of the body scheme (cf. child development and play and spoken language);

8. The spatio-temporal organization and lateralization (cf. child development and play and spoken language).

Rhythm games and all rhythmic exercises contribute to the structuring of space and time. They include the reproduction of rhythms heard, the creation of rhythms using the voice or all kinds of percussion instruments (1) (kettledrum, tambourine, tom-tom, triangle, maracas, rattle, castanet, bell, etc.), their creation using objects (stringing beads in a given order: one blue, one green, one yellow, etc., one small block, one large block, one small block, etc.) or their graphic reproduction (one circle, one line, one circle, one line, etc.).

Round dances, and dancing games also contribute to this. Oriented, controlled graphic exercices (2) (reproduction of written words, creation of comic strips) bring into existence the reflex for the direction in which writing flows (from left to right, from top to bottom), as do sequential pictures, stories and actions related to everyday life: rhythm of the day, verbalization of an action, etc. (cf. spoken language);

9. The development of the symbolic function and awakening to signs and codes.

Symbolic play and spoken language (the child's first symbolic activities).

Drawing: it introduces the child to the graphic sign (cf. from drawing to writing). It is an excellent stimulant for fine motoricity, making the fingers more skillful, through exercise, and more capable of obeying the will which commands them. Drawing is the child's first written mode of communication, and the only one available to almost all preschool-age children. Communication through drawing only exists if adult sollicits and induces it.

Spontaneously, children do not use drawing in order to communicate. At first the sensori-motor pleasure is more important than the pleasure of using it as a means of exchange. Rather than a language, it is a means of self-assertion ("I did it"). Just as gestures are used to complete verbal insufficiency, spoken language comes to the aid of motor skill and mental capacities, insufficiently developed for communication through drawing. At this point drawing is a pretext for communication. It progresses with the child and with his language: during a first period it is considerably enriched, then becomes poorer as the child begins to read and write.

Pictures: their very nature contributes to the development of the symbolic function, since they represent an object or a person, but also because they give rise to speech.

We use the word picture to designate all sorts of pictures, not necessarily figurative. It includes photography, slides, films, paintings, picture books, sequential pictures, comic strips, etc.

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(1) All of these instruments are easy to make (tins which are struck with a stick, gourds filled with seeds or shells, etc.).

(2) Left to themselves, children may acquire bad habits which they will have difficulty in losing. Children should always be showed where to start, in what direction to go, and when they reach the end of a line, where to start a new line, until this becomes automatic.

86

Education through pictures plays a major role, since it attracts the child naturally and has great power over him. It is an educational tool rich in possibilities, which one should learn to use, for pictures may be as dangerous as they are beneficial, given the number of messages they carry. Reading pictures is a subjective activity, since it does not consist in simply enumerating the objects or persons represented, as young children do (towards age two). The child must establish the relations which exist between these, and find the initial message. This uncoding develops the child's perceptions, for he must pay attention to resemblances, differences, the slightest details containing information. It calls upon observation, thought, imagination, a critical mind, curiosity. It enables the child to refine his logic and to make analyses and syntheses.

Pictures stimulate the child's oral expression (cf. spoken language); their use after contact with the real object represented in them revives the child's interest, engraves them in his memory and enables him to conceptualize.

Pictures of people help the child to discover his body scheme, to orient himself in space (like mirrors which reflect the child's image in life size).

Sequential pictures, which must be put in order in the same direction as writing, are particularly apt to prepare children for written language (cf. spoken language).

Reproductions of non-figurative paintings and unusual pictures lead to oral expression by sentences rather than words, since they are not inducive of enumerations.

The child should be placed in contact with pictures as early as possible (toward eighteen months). Old catalogues, whose pages the child learns to turn, thus exercising his fine motoricity, are highly appreciated by babies, and enable them to discover pictures and the alphabetic signs.

The greatest possible choice of pictures should be offered to the child, while taking care to eliminate those which may shock him. Special emphasis should be placed on documents close to reality, pictures representing scenes and people familiar to the child, or with which he must be familiarized (doctor, dentist, hospital, etc.), books of stories and tales, as well as beautiful pictures introducing the child to beauty and aesthetics. The texture and colour of the picture are as important as what it represents; for the child it is material, and therefore a reality.

Signs in the environment: the child must be initiated to all of the signs belonging to his environment (signboards, road signs, signals and emblems of all sorts), for he does not notice them spontaneously.

The interpretation of these signals accustoms him to uncoding, to attributing a meaning to signs by the mental establishment of correspondences (the traffic light is green: I can cross, the arrow shows what direction to take, the green cross tells me that this is a pharmacy...).

Coding activities: aside from drawing, preschool-age children possess few means of communicating by graphic signs. Their writing-drawing of the alphabetic code is not mastered well enough for them to reproduce letters perfectly and rapidly; the adult generally guesses them rather than reading them truly. Only a tiny minority of five year-olds are capable of combining letters in order to make a sound, and combining sounds to make words. In order to enable children to communicate by written signs and to produce messages without basing them on fragile, and therefore dangerous, foundations (confusion of signs, poor link between the sign and its corresponding reality, etc.), one may use their ability to draw and their imagination to create written signs based on simplified drawings

(pictograms or ideograms) representing the idea or the word, and which will be deciphered according to a code shared by a given group. Use of this method will consolidate certain attainments required for learning the written alphabetic language, such as the impregnation with the conventional direction of writing, fine motoricity, access to symbols. Indeed, the messages using pictograms as signs are ordered in the same way as the spoken chain and in the same direction as alphabetic writing. Pictograms may be proposed by the adult, or created by the child. At the outset, pictograms are closer to drawings than to symbols (a whole bird will represent the word "bird"). The adult should bring the child to symbolize only the characteristic element of the bird, its beak for instance. Thus, the pictogram may improve the capacity for abstraction.

It also enables the child to consolidate his speech and to improve his perception of the articulations of the spoken chain. As we have said (cf. spoken language), the child does not have a notion of "words", and does not know where the spoken chain should be broken. His first pictograms will symbolize words, but groups of words as well: he should be allowed to do so until he realizes that his message is not concise enough and feels the need to introduce written signs representing the non-represented elements. For instance, some children decide that the drawing of a tree means "in the forest". They may wish to write "in a forest", which is different, or "over the forest". The child then realizes that the symbol is too general, and that "in" and "the" should also be represented by signs if errors of interpretation are to be avoided. He then understands that the spoken chain is composed of links (the words), each of which carries an element of the message, and that each link is indispensable for the comprehension and reproduction of the whole piece of information received, and which one wishes to transmit. Pictograms created by children are easy to reproduce rapidly, and they represent a form of writing accessible to children of four or five.

10. The development of the ability to communicate and of the desire to communicate.

The ability to communicate in all manners should be encouraged in children, in order to create the need to communicate, and to provide them with the means of doing so.

Gestures, mimicry and language are particularly important, but adults should also encourage communication by the graphic signs accessible to preschool-age children such as the deciphering of a picture, a drawing, road signs, reading a story in pictures or coded strips (ideograms).

Communication does not mean simply deciphering. The child should be motivated and led to produce written messages: to draw narrative comic strips, to use pictures to tell a story, code strips using ideograms to transmit a receipt, a dance, etc. The graphism of pictograms does not directly prepare the child for reading and alphabetic writing, but they familiarize the child with the use of codes, the link between a sign and a meaning; this approach is essential for reading.

In order to be understood, pictographic writing requires an agreement among users on the meaning of signs, for these may be interpreted in different ways. The simplified drawing of an eye may mean the eye itself, or it may mean the verb to see. This leads the child to realize the ambiguity of such a code, which may only be understood by a limited number of initiates, and consequently, the need for a code understood by the greatest possible number of people: the alphabetic code.

Pictographic writing cannot be started before the age of four and a half - five years.

The creation of a cultural environment

The existence and value of a written code are not self-evident, and children have no access to it if they are not taught. A child who lives in an environment without books, without signs or symbols, as is often the case in rural areas, knows nothing of written language. If we wish the child to learn the written code, we must prepare him/her to do so. This does not imply the systematic teaching of reading and writing; what is involved is a maturation process, through which the child is led to a point where such learning may be undertaken profitably.

The child must mature to the point of reaching the level of abstract thought, so that an abstract piece of information may be seen as meaningful. This requires that children be surrounded by pictures, books, catalogues, etc.

Writing is first approached through sensory and motor activities (vision, touch and smell), before becoming more social and intellectual. Children gradually become aware of the existence of meaningful signs and learn to act as readers through their contact with writing and the multiplicity of their personal experiences. Adults may show them that writing provides information, by encouraging their questions about what is written, and helping them to discover those indicators which are meaningful. By reading story books to them, making books containing their favourite stories and looking at them together they help children to discover that reading may be a source of pleasure, and familiarize them, through direct contact, with the conventional character of the written word. Children thus learn notions pertaining to space and time: top, bottom, front, back, left, right, the order of pages. They build a relation with books and the written word. It is just as important for the comprehension of writing to know how to interpret it as to be able to produce it. Whenever a child must communicate over a distance, he/she should be encouraged to resort to writing, at the level of which he/she is capable.

This creates an awareness of the value of writing, since it may be seen as functional and natural.

Educational action at the preschool level is of prime importance; it does not consist in hastening the learning of basic skills such as writing and alphabetic reading, but in developing the child harmoniously so that he is ready to approach them under the best possible conditions.

The development of communication in the preschool-age child is linked with his overall development. The first type of communication are limited to gestures and mimicry (sensori-motor intelligence), which regress, to be replaced by language as it develops (symbolic intelligence). When spoken language is sufficiently constituted to provide a means of communication in itself, the child may learn written language. Spoken language compensates the child's incapacities in the field in writing, thus making partially written exchanges possible.

The means of communication most frequently used by the preschool-age child are gestures, mimicry and spoken language. Communication by graphic signs is still not very developed at that age, and needs the support of the other three means. As for alphabetic written language, even if some children have begun to approach it, they are hardly capable of using it in order to communicate.

D. CHOOSING PICTURES AND BOOKS FOR YOUNG CHILDREN?

Pictures and books play an important role in children's psychological and sensori-motor development, but even more so in their psycho-social and cognitive development. Contact with them, starting at a very early age (1), is particularly decisive for the development of abstract thought and for the child's future relations with the written word. Pictures and books help children to move from the concrete to the abstract; that is, from what is "seen" and "experienced" to what is "represented". Pictures materialize objects in their absence. The same is true of the written word. The ability to see a meaning in a picture constitutes a major intellectual step forward. It indicates that a graphic representation is seen as meaningful. This ability to recognize a picture precedes and prepares for the ability to decipher a word. It is an important step in the acquisition of abstraction. Looking at pictures and books is not enough, however. Children need the help of concrete experience; they can only recognize what they have already encountered. This requirement is extremely important, and raises the question of what pictures and books should be chosen for young children.

In industrialized countries, pictures and books for young children abound, but this is not the case in developing countries. Which books are best for children, given their specific experience? When no appropriate pictures or books are available, what criteria should be used for creating these?

How to choose or create pictures and books for young children?

The first requirement for a picture or book for children is that it be attractive, the second is that it awakens and retain the child's interest, and the third that it provides elements of personal enrichment. These three aspects are inseparable. They apply to both the content of the pictures and books and their appearance, as objects.

What themes should be chosen, in order to provide children with pictures and books that will interest and enrich them?

The themes chosen will depend on the child's centres of interest and level of development, as well as the objectives one wishes to achieve.

All of everyday life - objects, animals, plants, familiar people, common scenes, familiar landscapes, concepts (shape, colour, etc.) - is of interest in teaching young children to speak and to establish links between what they see and experience and what is represented.

(1) As soon as the child manipulates objects.

Documentary books may be used to enrich their vocabulary and extend their knowledge. These may deal with a variety of subjects such as animals, plants, houses, means of transportation, food, weather, the seasons, etc.

For learning to read, simple pictures with their legend and short stories about everyday life, told in words the child knows, should be chosen.

The child's imagination and fantasies may be stimulated by the choice of fantastic stories full of magic, peopled by characters with supernatural powers, and intricate pictures with myriads of hidden objects and people, and non-figurative pictures.

To develop the child's personality, help him/her to assimilate his/her own culture and discover other cultures, as well as personal relations, stories about children from other cultures but with similar surroundings and social background will be useful. Others may describe problems experienced by the child (fear, death, a new baby in the family, etc.), local tales, legends, songs, nursery rhymes and riddles. Pictures of the works of local or internationally known artists may also be provided.

Playing, thinking, the development of abstract thought and creativity may be favoured by non-figurative pictures, and pictures with something in common (colour, shape, origin, use, etc.), which may be put in order and used for some simple games (card games, lotto, dominoes).

If the pictures and books are to be attractive and comprehensible, several aspects must be considered.

A subject that stimulates the child's curiosity does not necessarily make a picture or a book educationally valuable. Care must be taken to present the contents advantageously. When composing a picture or book, the format of pictures and books, the make-up, or presentation of texts and illustrations, the choice of characters for writing, and of colours and graphics are all important, and constitute a global visual language. They should take the child's psycho-sensorimotor and intellectual abilities into account. In the **choice of materials,** for instance, cloth, then cardboard should be preferred to paper for small children. Since they are awkward at turning pages, and tend to suck on everything at hand, resistant materials are more appropriate for them. Young children tend to use their hands to explore the tactile qualities of the cloth, cardboard or paper before looking at them. If they are to please children, pictures and books must be nice to touch.

Format plays a functional role and contributes to imagination as well. A small picture is easy to handle. It may be turned in all directions and looked at closely. It is quite appropriate for individual use. A large picture, on the other hand, is made to be looked at, and is best seen as a whole from a distance. Several people may look at it together. Small books have something precious about them, and encourage intimacy, while large books must be looked at from a distance, and are more spectacular.

Shape is meaningful as well. Books are conventionaly rectangular, usually longer than wide, but sometimes wider, or square. Few books differ from this model, whereas pictures have outlines that lend themselves to greater fantasy, and their shape may be the same as that of their subject.

Make-up depends on shape. A balance should be sought between the illustration, text and background. Pictures (1) should occupy a dominant place in books for young children. As they become more proficient, the text will occupy a greater place, but should never be dominant. The infant's first pictures or picture books need not have legends. When they are present, they should simply show the word corresponding to the picture. Gradually, a simple sentence appears, then 2 or 3, depending on the child's ability to put ideas together. The colours used for the text and the drawings should be chosen so as to contrast with the background. Pictures should be clearly outlined, so as to stand out from the background.

The characters used for lettering should be those with which the child is (or will be) faced: the writing used in schools, in the local press, on signposts and in advertising, or the phonetic writing in which some languages are transcribed. They should be presented simply, with no ornamentation, so that children may recognize them easily. Children's first books and legends for pictures should be written in the mother tongue, so that a tie is established between speech and writing; children should not associate writing with a foreign language, but with the one spoken at home. When the language spoken in the family differs from that used in school, two versions of a same story may be given to children who are soon to start school: one in their mother tongue, the other in the school language. This is preferable to bilingual books, whose contents are too dense for young children.

The style of illustrations, should be representative of the local culture. It should be similar to the pictures seen on decorated monuments or in the work of local artists. The occasional introduction of different styles of illustration is enriching, however, and provides an idea of other means of artistic expression, and other cultures.

The relations between pictures and text, may vary with the use to which the book will be put. If the goal is to teach children to speak, to introduce them to reading or provide knowledge, text and pictures should be in perfect harmony. The pictures then illustrate the text, strictly, and do not provide any extra information: they provide an interpretation and facilitate "reading".

For anything imaginative, poetic or humouristic, there may be a difference between the illustrations and the written text. In this case, a person who is able to read is needed, in order to establish the link between the text and the picture, and help the child to understand the book.

Another point to be considered in creating a book is how *to divide it into sequences*. Regardless of the unit chosen, be it the page or the double page, each one should materialize a phase in the story or contain a complete set of information, depending on whether the book is telling a story or presenting a document.

The consecutive sequences should be linked together to constitute a narration. The sentences, like the pictures, should follow on from each other. All unnecessary details should be eliminated from the pictures, which should contain some fixed points of reference and some new elements characterizing the specific sequence. This helps the child to situate him/herself with respect to the ongoing action. It should be noted that the right

(1) Illustrations and not "thing-pictures". This is true for books as well as pictures.

192

and left pages of books do not play the same role. The right page is particularly important, since it is spontaneously looked at first. In some countries it is often considered to be more meaningful. In albums with no text, it is usual to place the action there. For books with writing, the picture is often placed on the right, with the text on the left. Although practical for reading to children (the reader on the left, the child on the right), there is no reason to generalize this presentation. In fact, it does not always encourage contact with the written word. Furthermore, it tends to reinforce the habit of reading from left to right, making it more difficult to teach the conventional direction of writing, when it goes in the opposite direction (right-left). Each page may be given a special function, however, thus creating a rhythm in the narration. In a story with two characters, for instance, the right-hand page will always be devoted to one character, the left-hand page to the other one. Sometimes the distinction between the left-hand page and the right-hand one is used to materialize two opposite facets of the book, such as the dream world and reality, law and the outlaw, the past and the present, etc. It may also be used to keep the child interested, by systematically introducing new elements on one side and repeating them on the other. These are just some examples; there is an infinite variety of possibilities left open for use.

For *producing pictures and books*, classical printing techniques are not the only valid ones for making attractive books. Anyone can make recreational books. Every handicraft method for illustrating and reproducing books and pictures may be used. Even simple techniques such as cutting out and pasting, stencilling, silk-screen, wood or leather engraving and embroidering of cloth books create original, high quality products. In countries where books are rare, families, educators, craftspeople and artists should be enrolled.

How to use pictures and books?

Use of pictures and books, like their production, is not the monopoly of specialists in early childhood. Every adult and every child in the family can and should establish a positive relationship through books. It all depends on what is expected of the child's encounter with the book. If he/she is to learn to speak and to name the pictures shown, the presence of an older sibling or adult, preferably (but not necessarily) able to read is required. Any person capable of speech can help a child to associate a picture with the corresponding word, tell a story using pictures or engage in talk with him/her around a picture or book. If an emotionally rich atmosphere is created through pictures and books, starting in early childhood, the child wil be attracted to reading. Books will be linked in his/her mind with happy moments. Children need someone who knows how to read in order to gain access to the written code, to the sense of writing and the meaning of words. This person provides indications through which the child gradually gains access to the code of written language. This gradual discovery of reading and writing must take place within a dyadic relationship. It enables the adult to take the child's own achievements into account, and to help him/her to progress at his/her own pace. This avoids situations in which the child would be forced to attempt to learn things for which he/she is not ready. Collective use of this material is not as rich in symbolic acquisitions. Furthermore, it does not encourage emotional exchanges. The emotional aspects connected with the use of books are as important as the educational content. When use of books is surrounded by tensions, it is to the detriment of learning. If the exchanges mediated by books are to be educational, they must be natural and warm.

Like playthings, pictures and books are a most important educational tool, and should be a part of children's everyday life. They are within everyone's reach: anyone can make them and use them within their home or in any educational or health structure attended by children.

3. THE CHILD AND EXPRESSION

Children have a need for expression, a vital need whose satisfaction is absolutely necessary if they are to become well rounded, imaginative, creative, independent people able to adjust to a constantly changing world.

A. WHAT IS EXPRESSION?

This term has been interpreted in many ways: it is therefore useful to define it and to specify what it involves.

In the general sense, expression is the externalizing of something that exists in an object, but is not apparent at first sight (you express the juice of an orange). Psychologically speaking expression is an intentional manifestation, oriented towards other people, produced by their presence only or consciously directed towards them.

Most of our actions: our gait, our movements, our gaze, our physionomy express some aspects of our character or of our personality, but this is involuntary and is not directed at anyone. Thus, when observation or circumstances bring us to discover some detail of a child's internal life, we can not call that an expression, since the intention is absent. On the other hand when the child babbles, speaks or speaks to himself, expression exists even if it is not directed towards any person present; we may suppose that he needs at least an imaginary person in order to babble or to talk.

The need for expression

Expression, as defined by psychology, is a need which exists in all human beings, and which takes on various forms. Aside from involuntary expression, mentioned above, the need for expression is the need of each individual to consciously project his or her personality towards, to create for oneself, first, regardless of the manner, then to communicate with others. It is both a way of acting which contributes to personal development and a means of establishing contact with others.

For the child, the need for expression takes the form of a need for action. It is shown by facial expressions, crying or shouting as well as by drawing, building or improvised singing. The intensity of the action is proportionate to the importance, for the child, of what he

wishes to express. The form of expression he chooses depends on his stage of development, his personality and what he wishes to express. Before he knows how to speak, the child uses gestures and mimicry, and as he grows he gains access to other forms of expression such as drawing, music or writing. The child is unable to express certain sensations, certain deep feelings such as sadness or jealousy, for lack of a rich, nuanced vocabulary. He then uses another language (painting or dancing) to say what he feels. Each individual's education and personal aptitudes determine the choice of a "language" in which he may most easily and faithfully express his thought. Poetry, dance or sculpture may be used.

Expression and communication

The need for expression is closely linked with the need for communication with others, but it does exist independently of the latter. During the first year of life the child babbles, plays by himself without any desire to communicate with others. Only once he has felt the pleasure of, then the need for exchanges, does he attempt to take possession of the code which will enable him to communicate. Expression connects two worlds: one is outside of the individual, the other is internal. It is characterized by a pressure, pushing out the deepest aspects of each person. Communication is the use of a particular code (language, singing, etc.) to render one's inner life present to others. It seems to be an essential requirement for our balance. The desire to express oneself is as strong as the desire to communicate. We first feel the need to externalize our feelings, our thoughts and our impressions, and to fulfill this need we communicate our concepts, our ideas, our conceptions, to others. Expression exists in the very heart of communication: we put a part of ourselves in what we say, what we create.

One of the objectives of education, and of preschool education in particular, must be to develop the child's means of expression so that he may not only learn to express himself, and to produce messages that are understandable by others, but also gain spontaneous access to understanding of other people's "expressions": this is communication.

B. THE EVOLUTION OF EXPRESSION: ITS DIFFERENT TYPES

The child's expressive manifestations are exclusively spontaneous until about the age of two and a half. They are shapeless, uncontrolled, undirected: what is most important for the child is to externalize when certain factors exist (situation or presence: the child jumps for joy, cries for fear, shakes with anger). In children over two and a half, expression becomes intentional. The child addresses himself to others, seeks understanding and approval, awaits a response. He attaches importance to the meaning of what he expresses, and constantly reworks his productions. He gradually learns to express himself properly and at the proper time (conquest of language, socialization). He then gains access to conformist expression. This form of expression may begin before age six, but it mostly becomes anchored after this age. Conformist expression is the result of an education which systematically tends to reduce the child's ability for expression to what is conform: this does not entirely satisfy his need for expression, which is a need for both creation and

communication. Conformist expression does not correspond to the child's need for creation, and it limits his freedom of expression in order to ensure communication. As for spontaneous expression, while it partially answers the need for creation, it excludes communication. A balance must be found between these different modes of expression, so that the child may develop his creative abilities, assert his personality and communicate. The child can not be reduced to a single type of expression, be it spontaneous or conformist, without being amputated of some of his possibilities. The acquisition of "techniques" of expression leads him to conformism, to some degree, but it also enriches his spontaneous expression and leads him to truly express himself, to translate his observations, feelings, impressions and thoughts more precisely.

We will use the example of language as an illustration of this. The child's first vocal productions are very rich: through them he expresses the fact that he is a "speaking" being, capable of creating. This creative ability appears more intensely at the level of intentional expression: the child creates his language gradually, as he conquers it (cf. "spoken language"), and invents the words he lacks. If he wishes to communicate, he must master his language, and conform to the rules governing it and to the way in which words are used in his milieu. Creativity regresses, to be replaced by communication. It may disappear completely, as is the case when we use polite formulas (official letters), expressions for special occasions (congratulations for a wedding), or fashionable expressions.

This conformist aspect of language, quite extreme, no doubt, leaves no room for the development of the personality, the true, sincere expression of oneself, or creativity.

C. CONDITIONS FOR EXPRESSION

Every educator is anxious to make sure that the child's need for expression may come to light and blossom. This requires more than the development of the means of expression; we must create the proper conditions for its occurrence as well as for the development of the abilities needed to satisfy it. No technique, be it language, dance, painting, contributes to the satisfaction of the need for expression if it is not motivated. In order to express oneself one must feel the need to do so and possess the means as well. A child who copies a drawing is only doing a motor exercise. The model which is given to him constitutes an external motivation; that is, one which is imposed from outside. External motivation is the opposite of internal motivation, the only one which leads to true expression. Internal motivation comes into being through the child's experiences: in time, he accumulates impressions, sensations, feelings. Then, at a given moment, he feels an urgent need to communicate them to someone else. When the child's impression is very intense, he reproduces it directly, relives the situation fully, imitates the participants: he becomes a lion, a horse, a mother. Unlike copying, imitation enables the child to create his own expression based on that of the other people. The impression experienced and the resulting expression do not necessarily occur simultaneously: sometimes they are separated by a

THE DIFFERENT FORMS OF EXPRESSION	THE DIFFERENT MEANS OF EXPRESSION	STIMULANTS OF EXPRESSION	
Body expression	Gestures Mimicry Dance Rhythmic dance	Mime, dramatic play Music, shadow theatre Round dances and dancing games, masks, disguises, games	
Oral expression	Language	Cf. "spoken language" and "child development and play".	
	Singing: interpretation, improvisation	Nursery rhymes, singing games, dancing games, songs, listening to music by local artists.	
	Poetry: reciting it, composing it	Stories, tales, nursery rhymes, poetry (inventing nursery rhymes, verses of songs, etc...)	
	Singing (cf. oral expression)	Making and playing simple musical instruments used locally (toms-toms, maracas, etc...) - Use of instruments accessible to children.	
Written expression	Writing Coding	Cf. Written language	
	Drawing Painting	Possession of materials, tools and techniques of expression (all crafts techniques).	A life rich in experiences and emotions.
		All objects or substances leaving traces (chalk, coal, dye, finger, stick, crayon, wax, etc...).	
		All supports for them (paper, cardboard, sand, cloth, wood, old newspapers, catalogues, wrapping paper...)	A rich environment, helping to shape taste (awakening the child to his culture — aesthetic values — and to other cultures).

		scratching. Painting techniques: finger painting, painting with a stick, a brush, with paints, dyes, etc...	are present, and who welcome the child's production with interest.
Plastic expression: the so-called "manual" activities.	Pasting. Cutting, shredding. Tearing. Engraving. Sewing	Presentation of paintings by painters. Visit to local craftsmen. Scissors that cut (cloth, cardboard, flowers, leaves, grass, etc...).	A confident atmosphere (Collective expression enables frightened, timid children to express themselves, for they feel more protected in the group and dare to take risks; collective creations are richer and favour the participation — however modest — of all).
	Weaving. Braiding, basket-making.	Grasses, thread, wool, leaves, creepers, straw, etc... techniques of weavers, basket-makers (visits to them).	
	Modelling, pottery.	Earth, clay, paper mâché, handmade, paste for moulding (made with flour, water, salt, etc...).	
	Sculpture.	Using soft material (chalk, for ex.). Presentation of works of art.	
	Handy work (constructions of all sorts).	Real, functional tools (saws, hammers), adapted to the height of the child.	
		Containers of all sorts: tins, cardboard boxes, bottles. Seeds, shells, stones, feathers, pieces of wood, of metal, bottle caps, buttons, nails, screws, corks... Minerals, vegetables. Commercial or hand-made paste (flour + water, for example). Dyes of all sorts. Construction games.	

large lapse of a time. Expression should not be hastened or forced. We must await the right moment. It is useful to take some distance before communicating emotions which are too violent to be retransmitted immediately. The child must be given a life rich in emotions and experience, so that he will have things to express. He should be encouraged to observe everything around him, to exercise all of his senses, which are sources of impressions, and to watch out for all facts and phenomena which may occur. If the child is awakened to his environment, he will become receptive to what he has to offer. If the environment is poor, and little happens in it, it is up to the educator to provide compensations, without going to the other extreme: too many objects shown at once, too many events in rapid succession make the child less receptive, for his interest is dispersed. The impressions received are then too superficial to be expressed afterwards.

Well chosen documents of all sorts (books, stories, pictures, music, artistic productions) reinforce impressions, mature them and lead to expression. Motivation and the possession of matter to be expressed do not suffice to produce expression, which requires a calm, relaxed atmosphere. The only thing that matters is the fact of expressing oneself, the result is secondary. The child must feel free to try himself out, in all confidence, even if the results are not spectacularly successful. By his or her permissive or authoritarian attitude, the adult has a decisive influence on the child's possibilities of expression, which may be considerably diminished. They may be reduced to nought by the requirement that they conform to adult expectations and conceptions. It is not unusual to encounter series of identical objects in exhibits of work by children, for they are entirely executed under the adult's management, although done by different children.

These pieces are no doubt flattering to the educator or the parents, but their contribution to the child's expression, creativity and independence is nil. Instead of helping him to go beyond conformism, they established him in what is already a great temptation for him, since he is constantly seeking the adult's approval, which provides security.

Neither leaving the child to himself nor directiveness encourage expression. The adult must act in this field as he should in all of the child's activities. This attitude has already been described at length, and we will not dwell on it.

The child's activity is stimulated by access to a great variety of materials and tools. These enable him to use techniques, to improve them through practice and in doing so, to perfect his means of expression; the more the child expresses himself, the easier and the more natural expression becomes, and the better the result.

In conclusion, here is a recapitulative table showing the different sorts and means of expression. To clarify reading, we have presented them separately, but we must not forget that the different types of expression are often used simultaneously: the child gesticulates and sings at the same time, draws and speaks, etc. (see page 95).

III. HEALTH MONITORING AND EDUCATION FOR YOUNG CHILDREN

1. DIFFERENT TYPES OF CARE TAKING FOR YOUNG CHILDREN

Programmes aimed at offering health and educational help to young children vary greatly throughout the world, and even within countries. Some are universally known institutions, such as creches, day care centres, nursery schools and kindergartens. Others are the result of community initiatives; they are informal, affect a relatively restricted group, and are just beginning.

At present, institutional formal and informal systems work side by side in both industrialized and developing countries. Institutional systems do not respond to the needs and resources of all children and families, within their own life context. Their cost often restricts their use to a minority of children belonging to the most privileged classes, to the exclusion of the urban poor and children from rural areas where dwellings are scattered. Clearly, no Third World government is presently capable of achieving complete coverage of its child population using conventional systems. Aside from the financial aspects, formal systems tend to exclude parents from the day-to-day working of the programme, thus maintaining them in a passive role and creating a gulf between children and their family. Often the educational models do not promote local cultural values.

Some communities or outside agencies have launched experiments, which function alongside of existing institutions, in order to respond to the real needs and resources of families. Despite this, coverage remains low, and many children still receive no help. Officials in a number of countries are seeking ways to set up new types of health and educational help, which would be more apropriate, effective, and less costly.

How can we reach a maximum number of children? How can more appropriate institutions and programmes be provided? How can programmes be adjusted to the needs of each community without reproducing social inequality? As long as parents work and many women are single parents, there will always be a need for institutions to care for small children. Often parents from underprivileged settings believe that specialists in early childhood are better equipped than they to deal with their children, and request their help. On the other hand, some families from intellectual milieux, especially in industrialized countries, refuse institutions and create their own system (1).

(1) Cf. Parent-run day care centres.

There are many possibilities, institutional or other, and these are not mutually exclusive. They complete each other, and provide more appropriate responses to the needs of families and children, and to national and individual financial situations.

If new systems are to be created for meeting the needs of small children and promoting their optimal physical, mental and psychomotor development, this cannot be done arbitrarily. Attempts must be based on current scientific understanding of young children's health and learning needs, and take their inspiration from some aspects of the experiments under way in different parts of the world. In establishing innovative systems, it is absolutely necessary to use the evaluation of national or community-run systems as a basic reference. No country has a universally valid answer, but each one does have some elements which may be useful elsewhere. The fact of considering ideas coming from other places does not deprive a project of its cultural identity, nor does it exclude their adjustment to the local context.

Some institutional systems, and others initiated by communities, are described below, not as an exhaustive list, but to suggest material and avenues for thought. Education for parents will also be discussed, since parents are the primary educators, and their role is essential; they constitute a constant reference for their children throughout their growth and development. Parents provide a permanent cultural model for their children, and share their mother tongue with them. Only a minority of parents are presently aware of their responsibilities to the point of collaborating with specialists in early childhood or creating their own structures for young children. A greater number lack time, or self-confidence, and leave the solution of their children's problems to other individuals or to institutions. Irrespective of the existence of any structures, education for parents is a key element in providing health and educational help for young children.

SOME TYPES OF STRUCTURES

The most usual types of institutional structures for children under 6 include crèches, day care centres, day nurseries, nursery schools, kindergartens and pre-school programmes within elementary schools.

A - Crèches

These are establishments that care for children whose parents are at work. Children may be brought there during the day, as soon as the mother resumes work after childbirth and until the age of 2-3 years. Some centres accept children longer, sometimes until age 6. Many crèches exist around the world, in both the industrialized countries and the developing countries; they are generally located either near the parents' home or near their place of work. This is a collective care structure with a long history (1), but with features that vary from one establishment to another. Simple child-minding establishments at the onset, they have turned into agencies for early childhood health monitoring and education. Where an untrained person formerly kept a vague watch over children, now teams of specialists (paediatricians, child nurses, educators for young children, psychologists, so-

(1) The creation of the first crèches in Europe dates back to the 18th century.

metimes even psychoanalysts) work together to promote their optimal development (1). This is an extreme example, however, and only applies to a minority of crèches. Others still employ untrained or insufficiently trained workers. Differences between establishments are not limited to their personnel and objectives, but touch on the number of children, as well, which may range from a very few to over one hundred. The size of the facilities and their equipment also vary: in some centres children are crowded into a single room with no conveniences or material, while others have play rooms, dormitories, a kitchen, a laundry room and plenty of playthings. Attractive surroundings and abundant material are no guarantee of the quality of activities.

Another element that varies is the way in which the centre is operated and financed: some receive funds from the national or local government, while others are financed by the families themselves. Considerable financial and human resources are required in order for these crèches to provide high-quality services corresponding to the multiple needs of this age group, which is both extremely vulnerable and requires individualized attention. In comparison with other types of structures, these centres are in fact quite demanding and costly.

There are a variety of types of crèches: mobile crèches, family crèches, parent-operated crèches.

Mobile crèches were created in India to ensure the on-going monitoring and education of the children of construction workers who move from one site to another. Such programmes make it possible to reach an underprivileged, marginal, migrant population whose living conditions prevent them from benefitting from ordinary basic structures. The programme is divided into three levels: a crèche for children aged 3-4 months to 3 years, a nursery section for 3 to 6 year-olds and an elementary school for 6 to 12 year-olds. The programme for young children is focused primarily on health and nutrition. Children receive an appropriate diet and parents are given nutrition education. The crèches are partially financed by the building contractors. Other activities such as the salvaging of paper and used objects, organized by the families, contribute to the centres' funds. Motivation rather than formal education is considered in recruiting staff. Workers are given general training based on the specific needs of each group of families, so that they will be versatile. They may also choose to specialize in health, nutrition, education or administration, depending on their particular competencies.

Family crèches do not have facilities of their own, but are operated in homes. The woman of the house takes in a small group of neighbourhood children. Women who take children into their homes are called "care mothers". They may work individually, or form a network. The quality of the service provided tends to be better when a network exists. In Venezuela, for instance, there is a family day care programme for families in the poor parts of Caracas. Each care mother is selected on the basis of her health, her motivation for working with children and the adequacy of her home. She takes in 5 chidren under age 6, from 6 in the morning until 6 at night. Care mothers were given a small stipend to care for and feed each child, plus a small contribution from parents. A training and supervision system was set up. Each group of 20 centres was backed up by a technical support team composed of a social worker, a health agent and a teacher. The network also included a neighbourhood coordinator for each 60 crèches and a legal service for each 8 neighbourhoods. This programme, financed by the Children's Foundation, was costly. It no longer receives funding, but is still in operation.

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(1) Monitoring of health, physical growth and development, preventive action and stimulation.

The same type of family day care homes exists in Colombia, but they are less expensive to operate, and are community-supported. The care mother takes ten 2 to 4 year-olds into her home. She is given training, and the aid of a "promotor". The promotor is in charge of health monitoring and the organization of activities for the children, as well as hygiene and the establishment of menus. At first these family day care homes were open to members of the community, who came to take informal lessons in child care. The promotor's tasks were then taken over by community volunteers, who take 10 to 25 children under 4 into their home each morning. These women are given basic training in child care and health (immunizations, monitoring of growth, first aid).

In France, in some urban neighbourhoods, care mothers with no professional qualification are grouped around a child nurse. Once or twice a week they and the children in their custody go to the nearest crèche. While the women attend their training course, an educator or a child nurse takes care of the children. They engage in a variety of activities and discover group life. Parents pay the crèche according to their income, and the crèche pays the care mothers. This solution increases the efficiency of crèches by extending their services to a greater number of children, while giving them a role in training.

Ordinary and family crèches deliver care and education to children while their parents are at work. However, some parents refuse to delegate their responsibilities in this way, and set up **parent-operated crèches or day care centres,** which they themselves operate. They hire specialists in early childhood to help them, but participate personally on a concrete, regular basis, in caring for the children. Each parent, father and mother, devotes at least one half-day a week, depending on their availability, to working with the children, while an educator or child nurse recruited by the parents is present all the time, thus providing continuity to the programme. He or she supports the parents, and helps them to improve their educational practices. Educational attitudes are thus taken out of the family context, mediated and sometimes dedramatized, since parents may talk with other parents and with professionals; this helps them to change.

Parent-run crèches are financed by parents, but occasionally receive funding from agencies concerned with helping families. They are less expensive to run than ordinary crèches, provide continuity between the home and the institution, and enable parents to play an active role.

B - Day care centres, kindergartens and nursery schools

These are day establishments that take in children aged 2-3 to 6-7, who are not yet old enough to attend school. Like crèches, they have a long history (1) and take a variety of forms. They vary in the ages accepted, but above all, in their objectives. Crèches generally stress care (diet, hygiene, monitoring of growth). Establishments for older children often give priority to physical, psychosensorimotor, socio-educational and cognitive development. The names: day care centres, kindergartens or nursery schools (2) do not correspond to significant distinctions between categories of establishments. Some day care centres prepare children for school, or even begin to teach them some subjects, whereas some nursery schools are more concerned with developing the child's personality and do not seem at all like schools.

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(1) They date back to the 18th century.

(2) There are other names : care-taking schools in Belgium, Child Stimulation Centres in Benin, etc.

Day care centres, kindergartens and nursery schools are generally differentiated by their supervisory agency, on the other hand. Day care .centres and kindergartens usually are administered by the Ministry of Health or of Social Welfare, whereas nursery schools are part of the Ministry of Education, but there may be some exceptions. Day care centres, kindergartens and nursery schools differ in their facilities, staff, financing and in how they operate. Facilities may be reduced to a very minimum: many day care centres (in Chile, Kenya, Mexico and Brazil) are run outdoors. This reduces expenses, but means that children cannot be cared for during bad weather. Buildings may be extremely rudimentary or quite luxurious. Staffing varies in quality and in quantity. There may be one adult for 8 to 10 children, or one adult for about one hundred children.

The number of adults present greatly influences the quality of care, particularly in the fields of psychological and cognitive development. No one individual, however competent, can give each child in a large group all of the personal attention he/she demands. In large groups, the adult's action tends to be more directive, and to pay less attention to the uniqueness of each child.

Staff training differs greatly between different types of establishments as well. The degree of competency and the cost of the programme varies with the level of basic education (illiteracy, elementary schooling, secondary schooling, etc.), the level of training (sometimes university level), its duration and content. This in turn affects the activities offered. For instance, workers with training in teaching often are more concerned with the cognitive aspects of development.

Financing may come from the supervisory agency (the Ministry of Education, Health or Social Welfare), from the local community, religious leaders, families, etc.

Parental financial participation is extremely variable: in some countries (such as China or Hungary) the government finances the entire operation. In other countries, the parental contribution may cover only the caretaker's wages, or only food. In the case of private initiatives, families must cover all costs. Schedules and calendars also vary from one establishment to another. Nursery schools generally copy elementary schools. However, most establishments set their hours in accordance with the parents' work schedule. In big cities, (Paris, for instance), children spend more than 12 hours a day outside their home. Some day care centres are open from 6 or 7 in the morning to 6 or 7 at night all year round. In rural areas (in Casamance, Senegal, for instance), day care centres for children aged 6 months to 5 1/2 years are open seasonally, and are run for 1 to 3 months during the rice-planting period.

The French system of child-care halts "haltes-garderies" is particularly interesting. They are open from morning to evening, all year round, and take children in for well-defined periods: a morning or an entire day, twice or three times a week. They are specially appropriate for mothers who work part time or who need some free time. They contribute to a gradual socializing process.

The vans or camping cars specially arranged for educational activities or play ("ludothèques") or as mobile libraries ("bibliobus") and which move from one village to another in those parts of France where housing is scattered also run on regular timetables. They are present once or twice a week, usually all year round, in each village within a given

geographic area, so that children may attend them regularly. Sometimes children may find a teacher or an educator there, as in a nursery school (1) or a day care centre. Ludothèques provide a place for playing, and loan games that children may take home. The libraries are run by librarians who tell or read stories to the children in accordance with their age and centres of interest. Books are also loaned out, and may be kept at home until the book van returns.

These systems were set up in response to the needs of villages in which resources are too scarce and children too few to justify the opening of a school, with all of its attendant operating expense. They are particularly appropriate for villages with an aging population. (Within a few years, these villages will no longer need establishments of this type, for lack of young children).

Preschools are run within the school framework. They take children one year before school-entering age. They constitute the first step into the school system, and prepare children for learning the basic subjects. They were created to avoid having pupils repeat their first year, when nursery schools were lacking.

C - Specialized child-mending structures

It should be noted that many physical, cultural and educational activities are organized for young children, outside of the institutions in charge of caring for and educating them. This is essentially the case in the industrialized countries, where such activities are the prerogative of children from the privileged and middle classes. They might easily be extended through use of the talents of some members of different communities.

The most frequent activities involve play, either in specially arranged play areas, or in "ludothèques".

Many libraries or mobile libraries (book vans) encourage children to familiarize themselves with books and pictures. Story and fairy-tale telling sessions as well as book-readings are organized occasionally or routinely.

Arts and crafts workshops for drawing, painting, moulding and sculpture, music and danse also encourage self-expression and creativity in young children. All of these cultural activities only deal with one aspect of the child's personality, but they do not require substantial finances and are easy to organize anywhere.

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(1) In this case, the annual calendar is the same as that of the local elementary schools.

Some examples of day care centres

In the Republic of Maldives, schools called KIYAVAAGE are run in homes. Mothers take in small groups of children (aged 4 to 6) from the neighbourhood, and teach them to read the Koran in Arabic. (They are supposed to be able to read before entering school). They also teach them the vernacular language, called Divehi.

The Accra (Ghana) marketplace day care centre set up by the women's association, takes in about 200 children (from infants to age 5), in its own facilities. The programme is health and nutrition-oriented. Children are fed breakfast and a complete lunch. An initial medical examination and immunizations are provided.

Koranic schools exist in many Muslim countries. They take in 3 to 4 year-olds. Their objective is to teach the Koran. Play activities are banned. Recreations are planned so that the children may rest their mind, and thus be able to continue to assimilate the verses of the Koran. The needs of the body are considered secondary.

In Cartagena, Colombia, the "escuelitas de bancos" care for groups of children in the home of a member of the community. They derive their name from the fact that each child brings his/her own little bench along. They are a community creation, and operated with no outside help for many years. Supportive programmes have improved them by providing training for teachers, along with educational material, in the form of resource packs.

2. EDUCATION FOR PARENTS

A - The need for educating parents

Education for parents applies to all families, regardless of their socio-economic and cultural level. It does not mean that parents should all be turned into specialists in early childhood, but that they should be given a basic understanding, so that they may play their own role effectively.

Parents' educational needs depend on what they know, their personal aptitudes, motivations and the context in which they live.

In some extremely underprivileged groups, there is no information available. Traditional parent education practices, transmitted via the family, have disappeared, owing to migrations and increasing urban development. Material subsistence is a constant concern, parents live from hand to mouth and have no time for other matters. There is clearly a need for basic knowledge to be transmitted globally, so that they may solve the problems encountered daily and raise their young children. Such parents do not express this need. Nor do those who feel that it is up to the State to take charge of socializing and educating

406

their children, and that they are entitled to access to appropriate institutions for this. It is therefore advisable that parents be made aware of their responsibilities. Fortunately, other parents do express the desire to be informed of the needs of small children, their attitudes as parents and their role. They do not always find answers to their questions, for lack of resource people and documents.

The more privileged families have access to tremendous amounts of information, circulated by specialists and by the medias. The parenting and educational models publicized are often contradictory. Some clarification is required, so that parents may develop a coherent approach. Some medias, for instance, present babies as little scholars who can (and should?) be taught to read, count and speak foreign languages in the cradle; they contend that it is never too early to start teaching. According to Glenn Doman's norms, arithmetic should be taught starting at age 7 months, reading at 18 months, about everything at 2 years, and computer science at 3 years. In the Western world, many parents tend to overstimulate their children, out of a desire to provide them with the best chances of success in the selective, competitive society that awaits them. Some clubs offer swimming lessons for 3 month-olds, an introduction to music at 6 months, artistic activities at 18 months, foreign languages between 2 and 3 years, depending on their difficulty with respect to the mother tongue, computer science and chess at age 5. Such children engage in a host of activities at a very early age, without their parents' measuring the effects on their development of this overstimulation, which occurs with no respect for the child's own pace and personality.

In developing countries, some families have their children taught the basic skills (reading, writing and arithmetic) at an early age, so as to be sure they will attend school. There is limited room in elementary schools, and children with preschool education have better chances of being accepted.

Both the lack of adequate care and stimulation, and overstimulation, depending on the social environment, clearly indicate that families need information and training.

B - Contents of parent education

The contents of the information and training given to parents depend on the setting. They attempt to answer the questions raised by parents when these are expressed, but this is not always the case. Often training is implemented by the government or by some of the many community-based associations and agencies. In Colombia, for instance, in the framework of a national plan to combat infantile mortality, the Ministry of Health has published many brochures aimed at providing an understanding of children. Handbooks discussing the emotional and psychological development of children from their conception to age 6 have been written for health officers, nurses, midwives and parents. The series is completed by a book on how to make playthings at home. It aims at reinforcing the emotional bond between parents and children through play.

Projects for early childhood care are organized through local initiative, and training programmes are created to provide support for them. Resource packs containing handbooks for teachers and educational material for children have been distributed to the "teachers" at Colombia's Escuelitas de bancos, so as to improve their teaching methods.

Training means giving parents the practical competency to provide proper care for their children, so that they may develop physically, emotionally and intellectually. It includes

107

learning about health (monitoring of growth, diet, vaccinations, minor treatments), hygiene (applied to the child and the environment), safety and education (including play and speech). It induces parents to be more aware of their child, and to modify their negative attitudes towards him/her. It helps them to overcome a number of difficulties, and to play their part in creating an overall context in which the child may develop harmoniously. Interpersonal and emotional aspects are dealt with along with material and health issues.

Parent education makes parents more effective, and helps them to gain assurance, to feel secure and to retrieve a positive image of themselves. Some mothers, particularly those who were unsuccessful at school, have very little self-esteem, and pass this on to their children.

Information completes basic training. It involves sharing recent findings and advances in the field of early childhood with parents.

C - Who should receive parent education?

Parent education is aimed at fathers, older sisters and brothers and grandparents, but above all, at mothers. They are the target of numerous projects, particularly when they live in underprivileged settings (slums) or are considered to be at risk (adolescent or unwed mothers). Education programmes for adolescent mothers are run in Japan, Jamaica and Surinam. They teach girls to stimulate their baby and to observe it. Planned parenthood is taught there as well.

Peru, Chile and some other Latin American countries run programmes aimed at interesting boys and unemployed fathers in their role as fathers. In these countries, men are not accustomed to caring for children, and therefore leave this entirely up to the women. Emphasis is placed on developing emotional relations, and on bringing out the father's educational role. Boys are involved in work with young children. Fathers are encouraged to allow children to work at their sides when doing everyday chores.

In Jamaica, Sierra Leone and Kenya, preventive programmes aimed at preparing adolescents for future parenthood are run in a few secondary schools. Similar experiments are under way in Holland and Trinidad and Tobago.

In Holland, some high schools for slow pupils are paired with day care centres for children ranging from a few weeks to 4 years old. Aside from the usual subject matter, students spend hours observing the children and helping to care for them and play with them.

In Trinidad and Tobago, similar programmes exist for 15 to 19 year-olds. They learn a skill while preparing to be informed, attentive parents.

In the slum areas of Lisbon, Portugal, grandmothers are given practical training, while similar efforts are made in the slums of Natal and Sao Paulo, Brazil, for children who are in charge of younger brothers or sisters. They learn skills such as storytelling, singing songs and collecting salvaged material for making toys.

In many African and Asian countries (and especially in India), "child to child" programmes have been set up. They operate in elementary schools: their objective is to have older children teach younger children, and are oriented towards health issues.

D - Forms of education for parents

Education for parents may take many forms, depending on the objectives, how available parents are, and the resources available. It may be individual or collective, theoretical, practical or even participatory. It is taught by professionals (in health, education, etc.) or paraprofessionals (mothers or other community members with prior training). Occasionally, the medias - television, cinema, the press - may be used.

A variety of places may be used: the child's home, a public place (a health centre, clinic, hospital, community centre, etc.), a training school, the parents' workplace or establishments caring for young children (crèches, day care centres, nursery schools, etc.).

Individual or group training, as well as use of the medias are each of specific value. Individual training, especially when provided through home visits, enables the teacher to adapt the child care and educational models to the cultural context and to the situations existing within the child's environment and through which he/she may be approached. The mother learns to make the best of the resources available for her everyday chores, and to provide basic care for her child. She improves her usual motions in ordinary life situations. Learning is concrete. She learns about hygiene, health and diet while washing the child or making a meal. These opportunities are taken to stimulate mother-child communication. On the other hand, this type of educational system does not widen the social horizon of the mother or the child.

Group training touches a greater number of persons. It encourages contact between parents, especially those who are quite isolated, and enables them to share experience. It is more fruitful when completed by individualized follow-up, which may respond to each case and make sure that what is learned is put into practice. Training given through the medias, like group training, reaches a broad public. It also requires supportive field work. When unsupervised it has little impact, for parents remain passive spectators instead of participating actively.

Participatory training is practical training, in which parents work with trained individuals who are in contact with children. In Sao Paulo, in some underprivileged neighbourhoods which lack teachers (there is one teacher for 50 preschool-age children), teenage boys and girls of about 15 act as monitors. They learn to care for preschool children by helping the teacher. Many parents are trained in this way, by participating in preschool education centre activities (nursery schools, day care centres, etc.).

There is an infinite number of combinations of these types of training. Some programmes associate individual and group training, individual training and use of the medias, or again, participatory training backed up by documentation.

Forms of parent education are closely linked with the framework in which they are conceived. Sometimes they overlap in the course of time. In one case of home training, for instance, evaluation showed that mothers tended to be isolated: group training sessions were therefore planned so that they might meet and exchange their experiences.

E - Some examples of education for parents

— Individual training

Project Hippy (Israel), is a home education project for mothers. The mothers pledge to participate for three years, when their child is 3 years old. (If they are illiterate, an older child may replace them, but they must still attend sessions). Each week, paraprofessionals (usually other mothers who have already been trained) visit their home and teach them to use educational materials for children (games, storybooks, etc.). The mother then practices the activities with her child or children during the week. Each activity lasts from 5 to 10 minutes, and aims at developing the child's speech, his/her perceptual and motor abilities, and capacity to reason.

Twice-weekly meetings attended by 10 to 15 mothers complete this home training.

Suitable versions of this project have been experimented in Canada (1), Chile, India, Turkey and the USA.

Similar projects are implemented in Ireland and Korea. In Ireland, mothers from underprivileged neighbourhoods who provide particularly good care for their children are recruited to visit neighbouring mothers once a month. They are under the "guidance" of nurses with training in public health. They use a handbook in the form of a comic strip in which the pictures are accompanied by a few sentences underlining the specific objectives.

In Korea, the home visitors are women students in preschool education. Each woman is in charge of 4 to 6 families. She is given a handbook for her own use, a brochure for parents, and educational material for children.

— Group training

In Vietnam, the Women's Association organizes courses for women within enterprises and cooperatives. A dozen subjects pertaining to child raising and education are discussed. Booklets containing important information are distributed. The courses are given by specially trained women.

Similar courses are delivered in Botswana, Lesotho and Swaziland for women who act as single parents. (Family structures are shattered by the fact that the fathers work outside the country, in the mines of South Africa).

— Training using the medias

Many televized education programmes have been devised for parents in England, Brazil and Venezuela. In the Dutch Antilles, for example, two radio programmes are broadcast weekly in order to educate and inform parents and the general public. In Bolivia, Peru and Indonesia, theatre plays with educational themes are given.

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(1) "La maternelle-maison": home nursery schools. As opposed to the Israeli project, the home visitors are professionally trained workers.

A mass communication programme has been set up in Malaysia to reinforce the educational programme implemented in day care centres on plantations and in rural areas. All of the medias are used to improve child-rearing and educational practices. Articles are published in the local and national newspapers in the country's four languages (Malay, English, Mandarin Chinese and Tamil). A series of articles is published in a national Tamil women's magasine. Short educational programmes and spots about young children are put on radio and television in order to educate parents. Toy-making workshops are run with parent participation. Home visits complete this programme.

Structures providing early childhood health care and education and education for parents constitute two complementary means of improving the future prospects for young children.

The examples presented here are far from exhaustive. They represent a sample of what is being done around the world. They are both rich and limited. Many children and parents still receive no support, and new solutions remain to be found.

3. AN APPROACH TO LEARNING : THE CONCEPTION OF EDUCATIONAL PROGRAMMES

The establishment of high-quality educational programmes for 3 to 6 year-old children is a difficult problem both for planners and for educators.

In an attempt to help educators working with small children to establish balanced programmes, a methodology has been experimented, and is presented here. It is not a miracle solution, but a thoughtful approach aimed at the global and specific satisfaction of the needs of children taken both individually and collectively.

A - An approach to learning

This approach was guided by the following basic rules :

— children throughout the world have the same basic needs with respect to growth and development.

— each child has his/her specific needs, linked with his/her own physical and mental individuality.

— each life environment has its own treasures and problems.

— every educational (1) action must take these factors into account if it is to be appropriate and optimal.

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(1) The word education is used in the broad sense, meaning all of the action undertaken by adults in favour of children, so as to provide them with the best chances for an optimal harmonious physical, psychomotor, social and intellectual development.

This approach procedes in five phases : analysis of the environment, choice of priorities, definition of objectives, establishment of activities and evaluation. The latter is not a separate phase since it is an integral part of various moments throughout the process.

The **first phase** consists of studying the environment so as to detect the problems of all sorts (diet, hygiene, educational and social problems, etc.).

The **second phase** involves choosing one of the above-mentioned themes which seems to be a priority, and which one wishes to use as an educational tool : hygiene, for instance. This theme may be broken down into several sub-themes : body hygiene, food hygiene, environmental hygiene, etc.

The educational objective to be reached is defined in the **third phase**. These objectives must be concrete and lead to the acquisition of adequate behaviour based on understanding. The simple inculcation of knowledge or the development of conditioned reflexes is unthinkable. To take the example of hygiene, the motion to be taught may be washing one's hands whenever necessary (1). The idea is not do develop an automatism within the educational context familiar to the child but to bring him/her to a degree of understanding and consciousness which will lead to appropriate behaviour under all circumstances. Indeed, children are quite capable of washing their hands whenever they are required to do so in an institution or in their home; this becomes a ritual of sorts, linked with the surroundings. If they do not know why they are doing so they have no reason to reproduce the action outside of the human and environmental context with which it has always been linked.

The **fourth phase** is the search for varied activities leading the children to integrate these motions in their behaviour while developing all aspects of their personality.

The **fifth phase** involves the evaluation of the children's behaviour and development on the basis of the criteria chosen at the beginning of the programme.

We shall summarize children's main needs, as well as the spheres requiring stimulation, so that no aspect of development will be overlooked.

B - Basic needs and spheres requiring stimulation

Children have physical and motor needs, others of an intellectual nature and also social and emotional needs.

a - Spheres requiring stimulation in order to respond to the physical and motor needs:

- general motoricity (movements involving the entire body); standing, moving around, balance;
- fine motor functions (precise hand movements);
- coordination (grasping, oculomotor coordination, sensori-motor coordination).

b - Spheres requiring stimulation in order to respond to intellectual needs:

- structuring the body image (the mental picture of one's own body);
- structuring of time and space (spatio-temporal structure): time, space, distance, rhythm;

(1) This objective is only feasible if water is available for washing the children's hands, and this is not always the case. Each objective must be acheivable in the local context.

- learning language;
- lateralization (the perception of how the body, people and objects are positioned in space);
- acquiring knowledge;
- memory;
- curiosity;
- attention;
- reasoning, analysis, synthesis;
- creativity;
- the discovery and use of codes (gestual, oral, written).

c - *Spheres requiring stimulation in order to respond to social and emotional needs (development of the personality and of relations with other people)*

- socialization (leading children to think about others, children and adults, and to act accordingly; inciting children to accomplish something in collaboration with their peers, developing their sense of responsibility with respect to the group);
- expression and communication (gestual, oral, written);
- development of the sense of beauty;
- learning universal values and those of the local culture;
- developing independence, self control and will power.

We have presented lengthy descriptions of the different types of activities which may be used to stimulate children in all of these spheres in the chapters entitled "Child development and play", "The child and the development of communication" and "The child and expression".

In order to attain the objectives defined for a given theme, children must be encouraged to participate in activities in various spheres; this is done by either using the children's centres of interest as a starting point or by creating situations which motivate them.

Unbalanced programmes will be avoided by a constant check on the correspondence between the children's activities and the spheres requiring stimulation.

C - An example of a learning programme

This example is an attempt at a concrete illustration of the recommended methodology. An earlier health analysis has shown that many children suffered from tooth decay, and had therefore stressed the need for very early sensitization of children to the prevention of dental diseases.

The theme chosen is children and hygiene. The sub-theme is oral hygiene. The objectives are:

— to give children good habits with respect to dental hygiene (use of teeth for chewing food only, decreased consumption of sugar...);

— the practical acquisition of a correct, effective brushing technique;

— with the help of parents and of the technical team, to prepare the children to see a dentist.

Activities should be designed to achieve these objectives and contribute to the children's overall development. They should be rooted in the observation of underlying motivations, by:

— observing the children and awakening their curiosity, using situations and experiences which interest them: the loss of a milk tooth, a toothache, the discovery of a carie, a visit to the dentist, little brother's first tooth...

— the creation of "motivating" situations: exhibiting of tooth brushes, toothpicks, dental floss, a product for revealing dental plaque, sticks used in some countries, an animal's tooth, an animal's jaw with its teeth.

All activities must have a concrete point of departure.

Activities contributing to physical and motor development (1)

• *General motoricity:* this theme does not, a priori, call for any activities which contribute to the development of general motoricity; time for indoor and outdoor physical exercise; as well as material and playthings which favour it should therefore be provided.

• *Fine motoricity and coordination:* brushing teeth, handling the tube of toothpaste, washing the tooth brush and the cup.

Activities favouring intellectual development (2)

• *Structuring the body image:* the location of teeth with respect to the mouth, the face, the entire body, the marks made by the teeth in a fruit (apple or pear), bread dough or cake...

• *Structuring time:*

- age with respect to teeth (the first tooth, milk teeth, loss of milk teeth, the 6-year tooth...)

- locating tooth brushing within the day (notions of before, after)

• *Structuring space:* notions of upper and lower, side.

• *Lateralization:* orientation with respect to the hand used by the child to brush his/her teeth.

• *Language:*

- conceptualization: all of the vocabulary pertaining to teeth, oral hygiene, dental care, the dentist.

- notions of time, space, colour, vocabulary pertaining to the sensations linked with teeth (heat, cold, pain), the tooth brush, toothpaste...

• *Perceptions:* odours, tastes (compare different toothpastes), different colours (shades of white and pink), the sounds related to tooth brushing and playing with water...

• *Acquiring knowledge:*

- about teeth: their growth, fragility, their name and function, ailments affecting teeth - the teeth of some familiar animals and their characteristics

- about care for teeth: when and how to brush teeth - what the dentist does.

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(1) Activities are classed according to their dominant aspect: dancing improves the child's general motoricity, drawing contributes to fine motoricity, but both are above all means of expression.

(2) These activities are based on action and sustained by language.

• *Reasoning, analysis, synthesis:* do experiments on animal's teeth to show the children how fragile they are (a tooth left to stand in coca-cola for a while becomes very soft...)

• *Creativity:* make a case in which a tooth brush may be kept, a cup for rinsing the mouth... Invent a song to accompagny tooth brushing, a dance on the rhythm of brushing, etc.

• *Discovering and using codes:*

- personalize tooth brushes, using a drawing or a sign; the tooth brush is a personal object;

- draw the different phases of tooth brushing (drawings, then pictogrammes and ideogrammes);

Activities contributing to social and emotional development

• *Socialization:* respecting other people's tooth brush; taking charge of a smaller child and teaching him/her tooth brushing; learning to use collective or community facilities (clean the washbasin for the next users, closing the tube of toothpaste, drying the ground when water has been spilt, etc.).

- Organize a "dentist" corner: the chair and tools, the waiting room with books, pictures and posters pertaining to teeth.

- Role-playing: dentist and patient, the mother taking her child to the dentist, the dentist's assistant.

- Invent rhythmic chants for brushing teeth, a dance to celebrate the loss of the first milk tooth...

• *Developing educational material: games, playthings and material, props for activities* (plan to provide them or make them)

- paper, pencils, paint;

- the dentist's white jacket for disguise;

- pots, tools and dentist's pastes (commercial or home made clay, and earth for modelling, etc.);

- posters, pictures and documentary picture books on teeth (children's teeth, adults teeth, animals' teeth), storybooks about teeth (the loss of a milk tooth, poor use of teeth and the consequences, a visit to the dentist, etc.);

- sequences of pictures: from the first milk tooth to the complete set of milk teeth; from the loss of milk teeth to the final teeth; from a caried tooth to the filling...

- embedding games, puzzles, lottos on themes touching on teeth; what is needed for tooth brushing, the dentist and his tools, teeth, what dirties teeth and what may harm them, what is used to clean them, acts which harm teeth (sucking ice, drinking boiling hot drinks, cracking hazelnuts, putting metal objects in the mouth, etc.);

- other educational games: term-to-term parallels (each person with his/her tooth brush according to its colour, size...);

- musical instruments (percussions, maracas) to accompagny invented songs and dances.

The list of activities using this theme is endless. Children need repetition in order to assimilate a movement or a notion. Monotonous repetition is tiresome, and so we must vary the situations, reintroducing similar contexts with new motivations. If children are to acquire a proper tooth brushing technique, then, they must practice it often.

Brushing should not become tiresome because it is difficult and repeated often: changes in some details such as the taste of the toothpaste and the use of a product to reveal dental plaque will make it more attractive. All of the above-mentioned activities should be made a part of the daily schedule, over the course of weeks, while respecting the children's rhythm. Unfamiliar movements and notions, as well as unknown words (1) are introduced gradually so that they will be assimilated properly.

Like the long-term programme, the daily activities programme (2) must be balanced, in order to respond to all of children's needs, and to contribute to their harmonious development.

D - Evaluation of the learning programme

The children's overall development will be evaluated as well as the objectives set with respect to the theme.

1 - Evaluation of the objectives with respect to the theme (3).

This evaluation is based on the progress and acquisitions made by the children. For example: observe and question children on how they behaved before the educational action, observe and question parents and children at the end of the programme: question and observe children before beginning educational activities pertaining to dental hygiene (have they a tooth brush? Do they brush their teeth? When? Do they have caries? Have they been to a dentist?)

Observe the children while they brush their teeth, so as to evaluate their brushing technique, and question them to find out whether their behaviour has changed.

2 - Evaluation of the child's overall development (cf. technical note on child observation: long-term observation).

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(1) The objective is not an encyclopaedic vocabulary and body of knowledge, but rather to seize the right time to provide children with those pieces of knowledge for which they are ready, and the right words they will need to express themselves.

(2) See Technical Note: How to set up a short-term programme.

(3) This is neither a scientific evaluation nor an inquisitorial investigation.

SUMMARY OF THE VARIOUS PHASES OF OUR APPROACH TO LEARNING

PHASES	APPROACHES
I	Investigation of the environment and inventory of the problems.
II	Choice of priorities, of a theme, and possible sub-themes.
III	Definition of educational objectives related to the theme: knowledge to be acquired, movements to be perfected. Review of the spheres requiring stimulation in order to respond to all of the child's needs.
IV	Description of activities, varied in accordance with the children's interests, which will stimulate them in all spheres. Establishment of educational material.
V	Evaluation of overall development and of the integration of new movements and behaviour.

IV. SOME LANDMARKS FOR THE MONITORING OF CHILD DEVELOPMENT (*) (**)

The Institute for Child Development (Instituto de Desarollo Infantil, or IDI), located in Cali, Colombia (South America), has experimented three series of landmarks for the monitoring of child development and the early detection of developmental disorders: one series deals with psychomotor development, another with physical growth, the third with sensory development.

1. MONITORING OF DEVELOPMENT IN CHILDREN UNDER SIX

In our work in what is considered a "Third World" country, we became aware of the need to provide monitoring for a very large child population. These extremely underprivileged children, who had no access to the national health system services, ran a great risk of presenting development disorders.

In this group, 3 children out of ten have a disturbed development, and 1 out of 10 requires institutional rehabilitation care. Such specialized is extremely scarce, however, very expensive and generally given too late: the chances of the child's recovery are then very slight (1) (2).

For these reasons, we need instruments for:

- monitoring children's development;
- early detection of development disorders;
- community education.

A. SPHERES OF DEVELOPMENT

Four spheres were defined: motor development, physical development, communication and socialization. They should provide an overview of the achievement and learning process in children under six, and of most of the abilities, knowledge and behaviour which are specific to them, while respecting the facts of maturation in each of these spheres (Fig. 1).

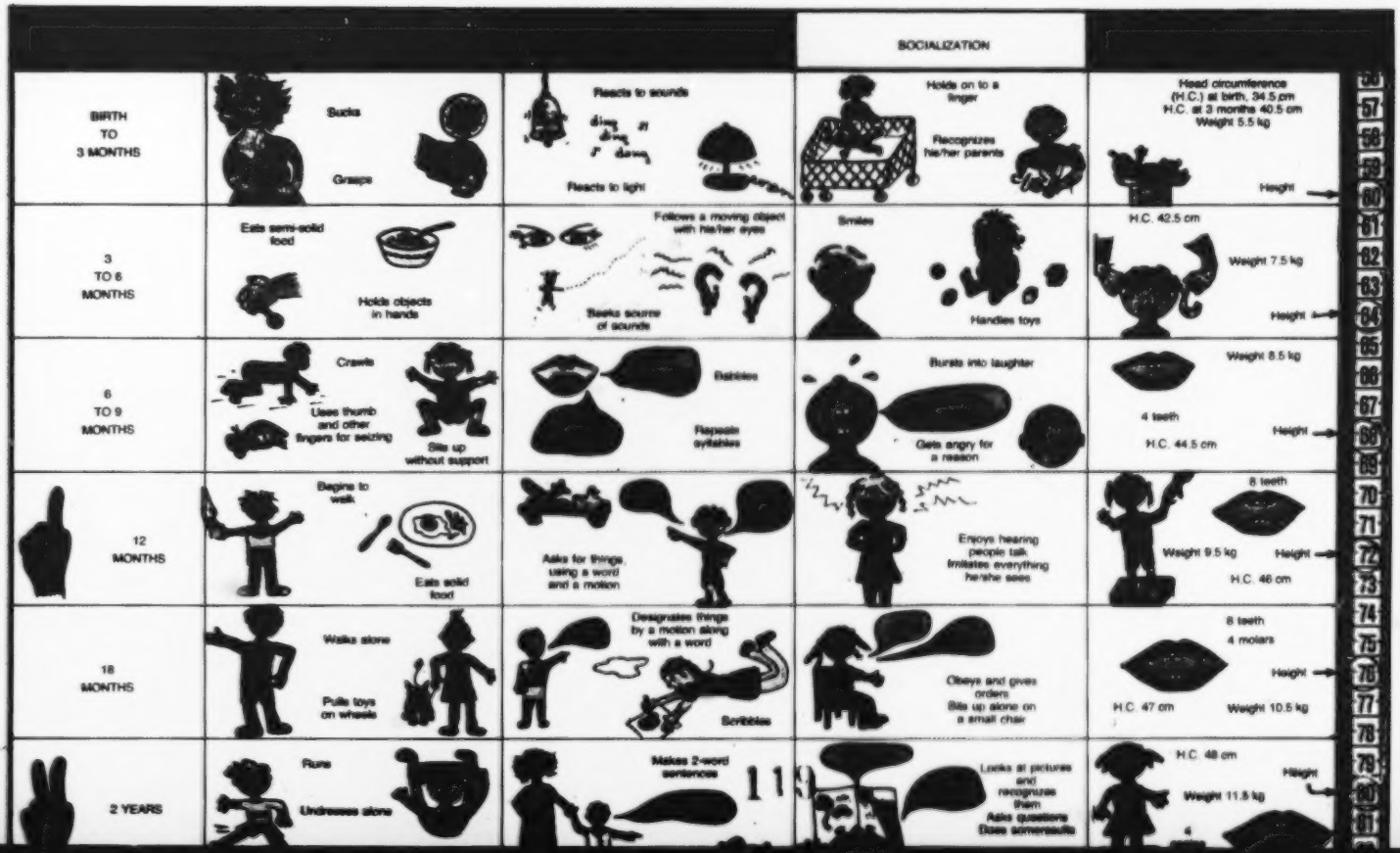
(*) by H. GENSINI and M.J. GAVITO - IDI - Cali, Colombia.

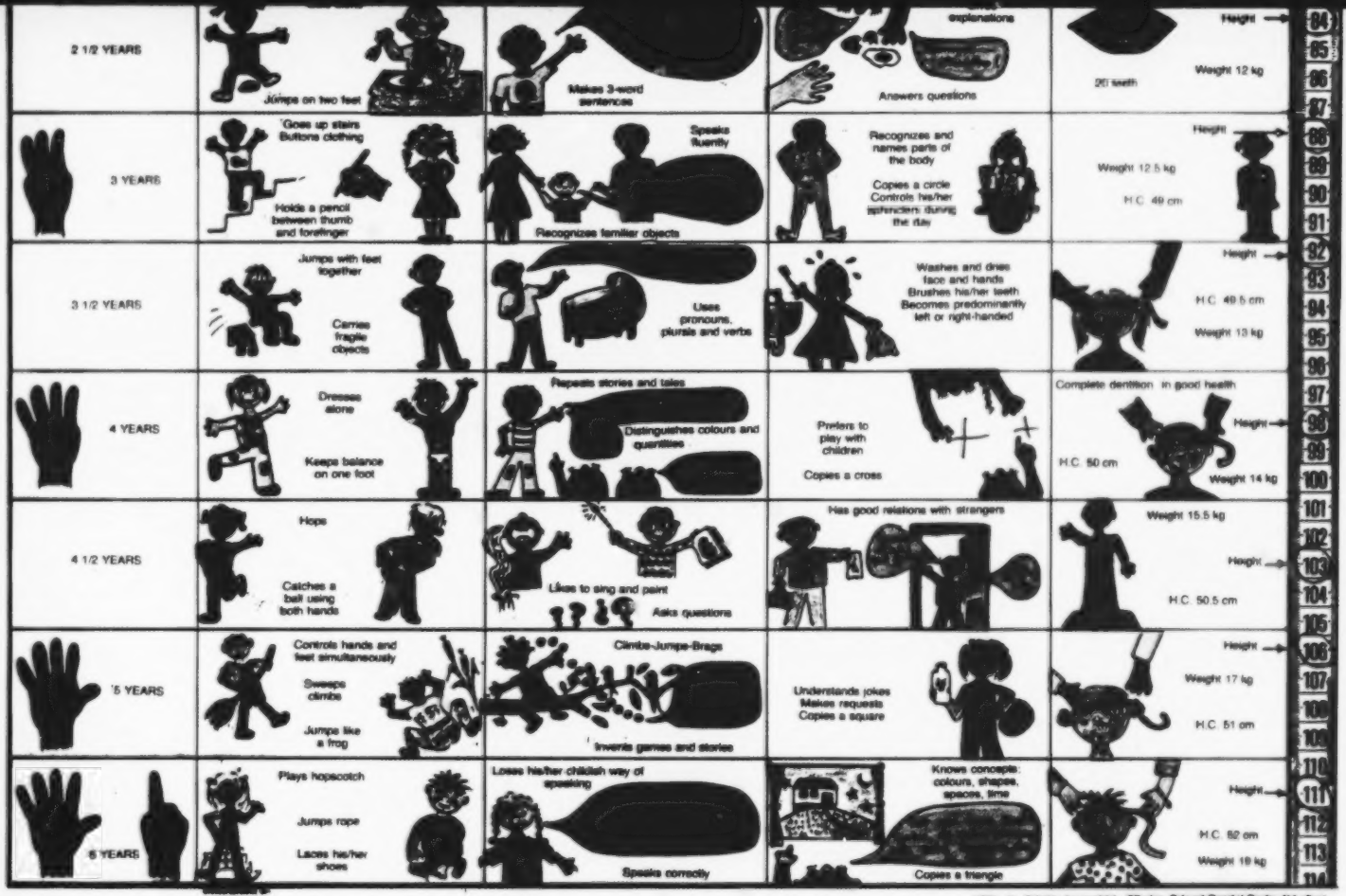
(**) The original text was sent to us in Spanish. It was translated by Lucette MALET.

MILESTONES LANDMARKS FOR CHILD DEVELOPMENT

THE FIRST 6 YEARS

GENSINI-GAVITO




2 1/2 YEARS
Jumps on two feet
Makes 3-word sentences
explanations
Answers questions
Height
Weight 12 kg
20 teeth
3 YEARS
Goes up stairs
Buttons clothing
Holds a pencil between thumb and forefinger
Speaks fluently
Recognizes familiar objects
Recognizes and names parts of the body
Copies a circle
Controls his/her sphincters during the day
Height
Weight 12.5 kg
H.C. 49 cm
3 1/2 YEARS
Jumps with feet together
Carries fragile objects
Uses pronouns, plurals and verbs
Washes and dries face and hands
Brushes his/her teeth
Becomes predominantly left or right-handed
Height
H.C. 49.5 cm
Weight 13 kg
4 YEARS
Dresses alone
Keeps balance on one foot
Repeats stories and tales
Distinguishes colours and quantities
Prefers to play with children
Copies a cross
Complete dentition in good health
Height
H.C. 50 cm
Weight 14 kg
4 1/2 YEARS
Hops
Catches a ball using both hands
Likes to sing and paint
Asks questions
Has good relations with strangers
Weight 15.5 kg
Height
H.C. 50.5 cm
'5 YEARS
Controls hands and feet simultaneously
Sweeps
climbs
Jumps like a frog
Climbs-Jumps-Brags
Invents games and stories
Understands jokes
Makes requests
Copies a square
Height
Weight 17 kg
H.C. 51 cm
6 YEARS
Plays hopscotch
Jumps rope
Laces his/her shoes
Loses his/her childish way of speaking
Speaks correctly
Knows concepts: colours, shapes, space, time
Copies a triangle
Height
H.C. 52 cm
Weight 19 kg

The fact that child development is an ongoing, harmonious process, within which achievements in each sphere advance at their own pace, with constant interactions between the different spheres, had to be taken into consideration.

Our work did not aim at establishing a new, sophisticated test for mental development; rather, we wished to determine children's potential for intellectual performance.

B. INDICATORS

Field work was begun in order to establish those elements which influence children's development favourably, given the cultural context; these findings were then examined in the light of universal scientific knowledge. This led us to establish a theoretical model in which all of these elements are summed up in the form of a limited number of indicators.

These indicators were to be:

- very concrete and interdependent;
- easy to verify by direct observation;
- usable without medical or laboratory testing;
- comprehensible for community workers and for families.

In addition to being specific to a given sphere, each indicator should, whenever possible, provide complementary information pertaining to other spheres.

On the basis of this model, we attempted to set up a trial, aimed at determining scientifically, statistically and practically satisfactory landmarks; that is, indicators which are reliable and easy to use.

This trial took a long time: it was first performed in 6 hospitals (1 urban, 5 rural) within the national health system, then in 72 other hospitals, and last, in some 200 schools and health units in urban and rural areas.

C. PRESENTATION

To facilitate work with these landmarks, an attractive, easily comprehensible presentation was absolutely necessary. The following requirements had to be satisfied:

- short written texts, simple, clear words, short, very accurate sentences;

- drawings to illustrate each indicator, coloured drawings to complete the text, but which are not simply decorative or space-fillers;
- in the 4th edition of the grid presenting the indicators, we used drawings by children; these are easier for people to understand and accept.

Our experience with these 4 editions has taught us that it is preferable to publish two versions:

- a wall poster for large institutions attended by a great many children each day;
- a small poster for use in the field, by the promotor, at home by parents, at his/her desk by a doctor.

D. HOW TO USE THEM

The grid showing landmarks for child development is valuable or:

- providing follow-up of development,
- detecting any disorders.

By following the entries horizontally, we may evaluate a child's development and see whether he or she has reached the level corresponding to his/her age. By following the grid vertically, we may determine the child's level of development in a given sphere.

When assessing a child's development, we first consider his/her ability to achieve the level of performance defined as minimal for each indicator at his/her real age. If the child responds easily, this indicates that the development process is proceding normally at the time.

If he/she is not capable of the minimum performance for his/her age, we move up to the previous box and check on whether he/she corresponds to the level indicated there. If not, we continue moving up until we reach the point for which the child's results are satisfactory.

The age corresponding to this box shows the stage of development reached by the child, and the difference between this age and his/her real age shows the degree of retardation.

If a child's results correspond to his/her age in some spheres but not in others, the same procedure is used to determine the degree of retardation in each specific sphere.

E. WHO USES THEM?

As a general rule, these landmarks are valuable at three levels, with differing goals:

- *for the follow-up and monitoring of development*, they are used by *promotors*, primary health care workers, health aides and teaching staff (in schools, day care centres, kindergartens): that is, by people working at a grass root level, and by parents,
- *as a tool for assessment*, they are used by nurses, general practitioners and psychologists in charge of checking on the development disorders or faltering suspected by grass root workers.

It is important to note that 90% of the children in this particular group are in the hands of general practitioners whose studies have provided them with only a superficial, incomplete understanding of child development questions; one which is limited to the diagnosis of malnutrition and the monitoring of weight.

- *as a first "filter"*, they are used in many health institutions to detect any problems in children, so as to take better advantage of the specialized services available, be they in the field of psychology, neurology, paediatrics, nutrition or rehabilitation.

Use of these landmarks in no way excludes or counters the subsequent implementation of other means of studying specific child development problems.

Furthermore, we have had several opportunities to observe that parents tend spontaneously to use these landmarks and the growth chart to evaluate their own children. This very positive attitude is also quite revealing of the general public's ability to understand and accept them.

2. THE GROWTH CHART (fig. 2)

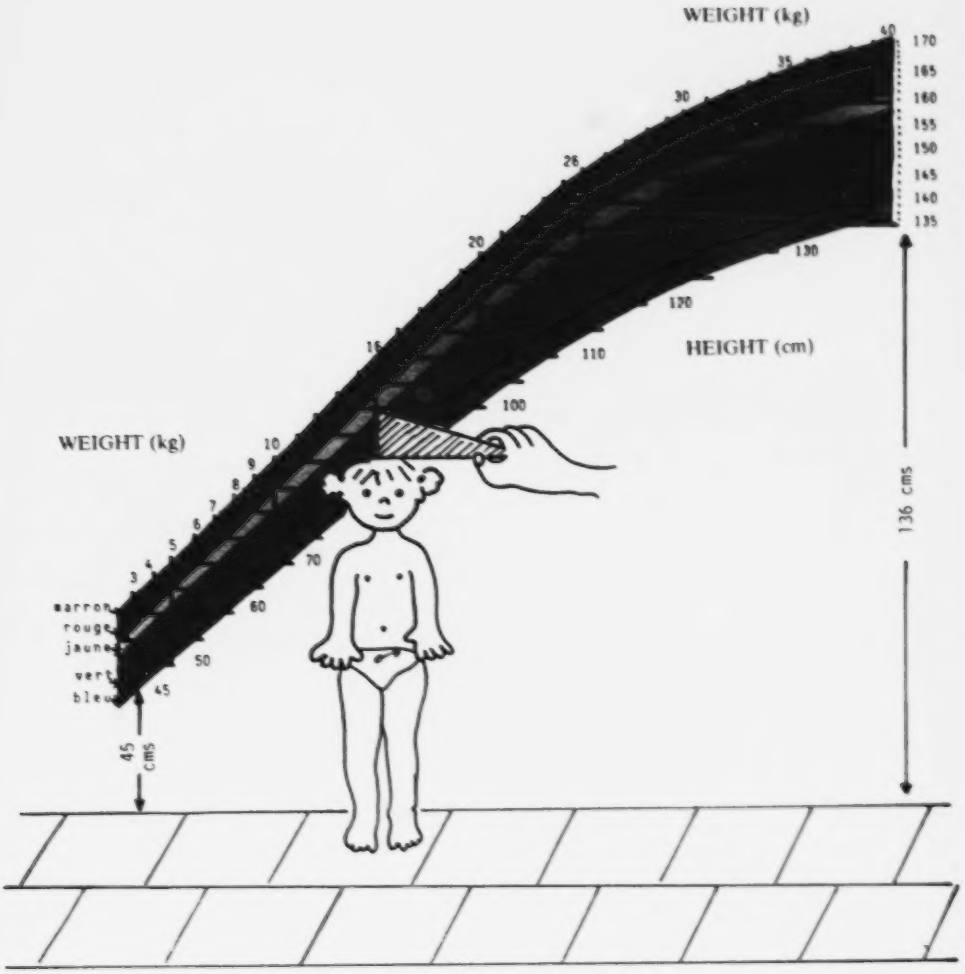
The establishment of a life-sized growth chart, to be placed on a wall, corresponds to the need for a single graphic representation which would serve as a reference for the control and follow-up of physical growth of children in different institutions.

In the course of physical growth, some changes occur rapidly, with sudden variations. Weight, for instance, may change from one day to the next; it may rise or fall, since it depends mostly upon the variations in the amount of water contained in different parts of the body, the varying amounts of fat accumulated in the fatty tissues, and changes in other tissues.

Weight is a good indicator of short-term nutritional status. However, monitoring requires that attention be paid to the many changes that occur during development. These are linked with far more complex factors, and they create disturbances that can only be seen in the long range. Height is a good indicator of the latter.

FIG. 2

GROWTH CHART



Drawing reproduced by Catherine Schwartz (I.C.C.).

Height is as important an indicator as weight. As opposed to weight, height cannot decrease, but can only come to a halt or progress. It provides good information about faltering or accelerated development, and on chronic or acute nutritional problems.

By establishing a relationship between the variables weight/height and age, the growth chart on the wall immediately furnishes an overall picture of the child's physical development.

REQUIREMENTS FOR A SINGLE CHART

It must :

- cover the largest possible age group: from birth to the usual age when leaving elementary school;
- be appropriate for use in following up both preschool and school-age children, indifferently, both within the community and in health, social or school establishments;
- include age, weight and height factors in a single diagramme, so as to facilitate the early detection of disturbed physical development;
- enable workers in charge of monitoring child development to check rapidly on the accuracy of the information noted by parents at home, on their individual chart;
- complete the individual WHO/UNICEF charts, which are widely distributed and used throughout the world.

A. SOME ADVANTAGES

When small flags showing each child's initials and age are pinned to the chart, an overall picture of the growth of an entire group of children may be obtained at a single glance; this is most valuable for research.

The growth chart is an excellent learning tool. Indeed, it may be used outdoors, in broad daylight, with no special lighting, for practical demonstrations of how to assess children's growth directly on the chart.

Within institutions, this wall chart of growth solves a very frequent problem once and for all; that is, the lack of a measuring stick. No solution of this type has been found for the problem of scales, however.

The ongoing use of this growth chart has facilitated comprehension of the individual charts. It is in fact easier to discover data on a wall chart, since the curve is life-sized, and height is materialized directly by the child's own head. *It should be noted* that many mothers and field workers may have difficulty in reading the coordinates of the graph, for this is not learned before secondary school, and only 15% of these people have access to such schooling.

B. INSTRUCTIONS FOR USE

Each child is weighed on a scale, without clothing or shoes. His/her weight is located on the chart. The child is placed in a standing position (heels together, legs straight, back flat against the chart and head well centred) under the white line representing his/her weight.

Using a ruler, or, preferably, a square, placed flat on the head, the place where the top of the child's head arrives is marked. This provides the following information:

- the child's height in centimeters;
- his/her nutritional status, indicated by the colour of the stripe in which he/she is located;
- the correspondance between his/her height and weight and his/her age.

The vertical lines on this wall chart represent weight in kilos or half kilos, while the horizontal lines represent height in cm. The black dots express the recommended or advisable mean figures for each age.

On the original chart, the stripes are coloured, and indicate the relation between weight and height, and their comparison with the recommended or advisable mean figures for each age. The meaning of the colours is generally as follows:

- green stripe: normal nutritional status;
- yellow stripe: risk of malnutrition;
- red stripe: patent malnutrition;
- brown stripe: severe malnutrition;
- blue stripe: overweight.

C. COMPLEMENTARY DATA

The green stripe shows the range of figures considered to be references in terms of percentage of weight and desirable height at a given age. It is bounded by the 10th percentile (90% of mean weight) and the 90th percentile (110% of mean weight).

The means with respect to age (indicated by a series of black dots), correspond to the reference figures for weight/height ratio, or 100% (50th percentile).

The yellow stripe stops at 85% of the reference weight for a given height (percentile 3), indicating a weight lag of up to 15% of the expected weight for the actual height.

The red stripe indicates a weight lag of 20% in comparison with actual height, and the brown stripe represents a 25% lag in weight with respect to height. The latter two stripes point to a very considerable loss of weight which may be judged indicative of patent and severe malnutrition, respectively.

The blue stripe shows excess weight-up to 20% in comparison with the reference mean. Figures located in this stripe are therefore considered as indications that the child is overweight.

The figures used in this growth chart were established on the basis of the authors' own experience, the WHO norms and the Tanner-Whitehouse international standards for weight and height.

Internationally speaking, this wall chart has a predecessor: the weight/height chart established by Nabarro et al (3), but our growth chart presents some additional advantages:

- it covers a more extended age group: from birth to age 12;
- the figures for weight and height take another factor into account: the child's age;
- it shows a continuous curve.

This growth chart is most useful at present, and we hope it will continue to be helpful in the coming decade; its efficiency will probably be greatly improved by the use of computerized systems whose programmes will integrate the three factors for each child.

3. A PAEDIATRIC GRID FOR SENSORY ASSESSMENT (fig. 3)

This grid was established as a result of our need for a simple, reliable technique for assessing the sensory status of small children. It may be applied reliably to children over 4 in about 5 minutes, making it possible to examine large groups quite rapidly, and to detect the presence of any sensory pathology.

As a result, only children with patent or suspected pathology are subjected to specialized testing. This system enables us to save time and money, and to make more efficient use of the existing resources.

No accurate measurement of the extent of sensory problems in the population with which we are working is available as yet, but we have estimated it to be 9 to 15% higher than in the developed countries (4).

All-inclusive statistics for the people attending health units show a frequency of about 12% for hearing impairments and 33% for visual impairments. Figures of this magnitude fully justify a routine examination of as many children as possible within the overall population.

A. THE ASSESSMENT GRID

The hearing test is always done first. The grid for this test contains 40 two-syllable words commonly used in childish speech but not excessively familiar, to avoid having the child think of them automatically. This ensures us that the child has listened to the entire word and did not guess it after hearing a single syllable.

During the consultation, the child is placed 3 meters from the grid, with his/her back to it. The tester is along-side of the grid, and asks the child to repeat the words he/she hears. Words are pronounced slowly, one after the other, in a normal voice, starting on top of the left-hand column, and going down each column (there are 5 columns, each containing 8 words). The child's hearing score is obtained by adding up the errors committed in each column. Here are some examples of hearing scores.

Number of errors per column

3 4 3 0 0 → loss of hearing in the low register

0 0 3 5 4 → loss of hearing in the high register

0 3 4 3 0 → loss of hearing in the midle register

0 1 0 0 0
0 0 1 1 0 → normal hearing scores
0 2 0 0 1

4 3 4 5 3 → loss in all registers

The words represented by the figures (word-figures) are placed in the columns in accordance with their balance of frequencies:

- the low register on the left;
- the high register on the right;
- the middle register in the central columns.

This hearing assessment is an example of a simplified logoaudiometric test using 40 words; it not only detects hearing impairment, but shows whether the register affected by the impairment involves low sounds, high sounds, or both (5).

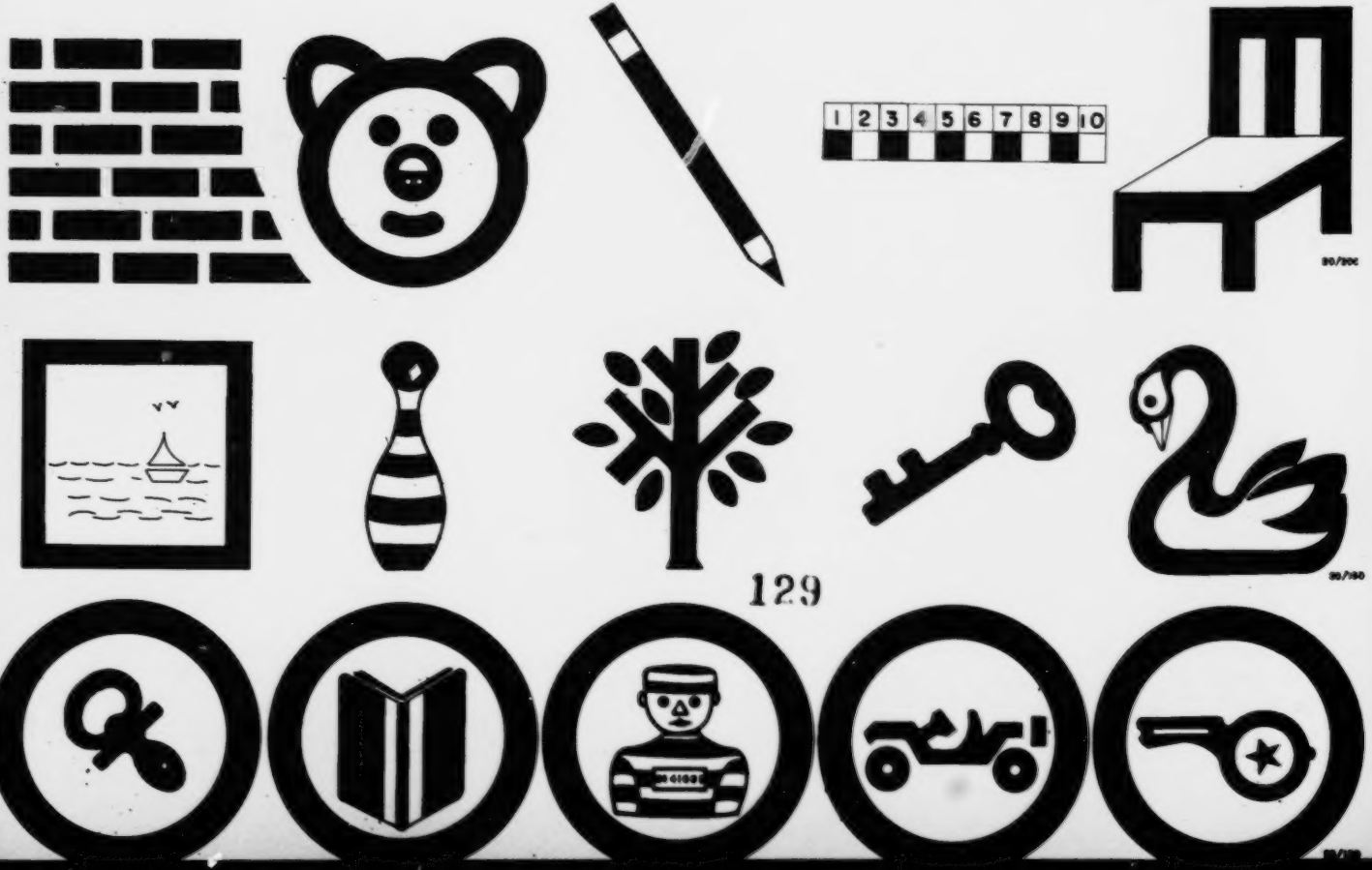
B. ASSESSMENT OF EYESIGHT

A means of assessing eyesight at a distance of 3 meters was already available in the form of Snellen's grids, but the use of these multiple "E" grids required that the child be instructed in advance, and created a risk of error, since small children have a very approximate idea of the position of the bars of the "E", on the left or right.

Fig. 3

PAEDIATRIC GRID FOR SENSORY ASSESSMENT

GENSINI-GAVITO 1981



To avoid this problem in establishing and drawing our model, we have chosen immediately identifiable pictures such as those used in the "American Optical test".

Vision is assessed by placing the child in front of the grid, 3 meters from it. He/she is asked to name each figure on the first line, going horizontally from "wall" to "chair". If the figures on the first line are correctly perceived, he/she is asked to go on to the second line, and so on down to the eighth line, always going from left to right.

Visual discrimination capacity of children:

2 years	20/80
3 years	20/40
4-5 years	20/30
6 years or more	20/20

The grid should be placed in a well lighted place; the lower edge placed 1 m above the ground.

It is important to note that the individual assessment of one eye or one ear is feasible, by covering the other ear or closing the other eye.

C. ASSESSMENT OF COLOUR VISION

The paediatric grid for sensory assessment may also be used for evaluating the perception of colours at a distance of 3 meters, but for greater convenience and reliability it is preferable to perform this test at a distance coresponding to the length of the child's arm.

Nearly 2% of all children in the overall population have difficulty with colour vision. This figure is higher for white boys.

In a first phase, this test is used to detect disturbed perception of colour, and in a second phase, to orient children towards specialized tests such as the Farnsworth-Munsell mobile coloured disk test for the establishment of series of colours, or the pseudo-monochromatic visual aids using numbers (Ishihari's single number test) or geometric shapes and crosses (Hardy-Rand-Rittler).

Although such screening may seem unimportant, its pertinence should be emphasized. It is in fact important to take a child's difficulties in perceiving colours into account, since colours are often used as a code or key in the course of various learning processes.

To evaluate perception of colours, the child is asked to point to the differently coloured dots located on the rings. The child need not know the names of the colours, and such knowledge is of no importance.

D. ASSESSMENT OF PRONUNCIATION

The grid for sensory assessment may be used to detect difficulty in pronunciation at two points:

- during the hearing test, when he/she repeats the list of words, without looking at the grid;
- during the assessment of eyesight, when he/she names the different figures.

A child over 5 should be able to pronounce the 40 two-syllable words on the grid correctly. If this is not the case, the sounds on which he/she stumbles or commits an error in pronunciation should be noted. Next the organs of speech are examined thoroughly: the lips, teeth, tongue, jaws, hard palate, soft palate, velum, pharynx, larynx, nasal and paranasal sinuses. If necessary, the child is referred to a specialist, with a detailed report on the examination.

In the course of time, our experience with this paediatric grid has shown us that it may also be used with illiterate or uneducated adults, and for the global evaluation of sensory deficits in the aged.

4. GENERAL REMARKS

Why was it necessary to create these tools? The answer is quite simple. However strange it may seem, we had no simple technique available for the monitoring and follow-up of child development, nor any means of diagnosing developmental disorders. It was therefore urgent that we establish these, in order to provide monitoring and follow-up for a very large child population showing signs of a high proportion of developmental pathology.

These tools have enabled us to perform assessment effectively, reliably and rapidly (a most important factor in working with a predominantly very young group of children). This assessment may be repeated over the years, provided we are sure of being able to compare the results.

Another important aspect was the need for parents to gain awareness of their children's development process.

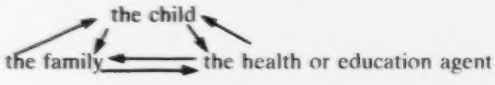
WHO CAN USE THEM?

The three tools currently available are used in some 1500 institutions and in the numerous communities in which the latter are active.

In our opinion, these tools are far more effective when they are used directly WITHIN and WITH the community, be it large or small, rural or urban.

The different phases of children's development may be best and most reliably observed within their own environment. Institutions provide better facilities for diagnosis, but assessment is always performed under more artificial conditions there.

Our experience has shown us that in working with a community, care should always be taken to involve the following elements:



OTHER ADVANTAGES

We wish to point out some other, less obvious advantages which are worthy of mention, in addition to the good results obtained with this system over the past decade.

- A single tool (such as the landmarks grid) was effectively applied to child monitoring at various levels ranging from parents and promotors to teachers and specialists.
- A few copies suffice for several years of work with hundreds, sometimes thousands of children within an institution or a community.
- Routine work with parents incites them to act preventively, and in many communities it has contributed to their awareness of the possibility of achieving good results, and improving their child's development.
- This increased awareness among families has resulted in an increased number of consultations at child care units. This is particularly important in a system such as ours, since units are created in response to existing demands.

CONCLUSION

In the last decade, we have succeeded in improving children's life expectancy through the intensification of action aimed at preventing infantile mortality caused by infectious diseases, improving the supply of potable water and establishing an adequate system of monitoring for newborns and prematures.

In our opinion, the main objective for the forthcoming decade and the close of the century should be the implementation of an effective sytem for the monitoring of child development. It is a fact that along with regular follow-up, the use of several satisfactory tools for assessment constitutes the best way to make sure that children are developing harmoniously and to provide reliable means for the early diagnosis of those disorders and disabilities that affect the "children who survive".

One urgent, complementary task of our programme should be to suggest global and specific responses aimed at encouraging the development of normal children and proper measures for the rehabilitation of children with developmental difficulties, so as to enable them to live a happy, independent and useful life.

Here too, we are rich with an experience that we would gladly share with others (6) (7). We hope to be able to standardize our tools in the near future, so that they may be applied to other cultures and other countries. If you wish to make use of this experience in your country, we cordially invite you to contact us either directly or through the ICC.

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TECHNICAL NOTE

THE OBSERVATION OF YOUNG CHILDREN

Close child observation is an equal necessity for nurse, doctor, teacher, activities director or parent. Observation permits better contact with the child, better knowledge of the different aspects of his personality and development, and, as a result, more effective and appropriate action.

WHAT IS OBSERVATION ?

Observing the child means :

- watching him live
- witnessing his experiences (successes as well as failures) and his development ;
- taking the trouble to get to know and understand him, so as better to help him grow and progress, considering him as a sensitive as well as intelligent being.
- paying attention to his needs and failings.

It means neither judging nor moralizing in terms of good or bad.

WHEN TO OBSERVE ?

Every adult in charge of children should be in a constant state of observation. Certain activities, like unorganized play, facilitate observation.

HOW TO OBSERVE ?

Individually :

a) observing specific behaviour in special situations (how the child reacts when faced with something new, a difficulty, for example) ;

b) overall observation to make sure that the child does not have some immediate difficulty (sickness, for example), or that he is no likely to be in trouble very shortly (playing with a dangerous object that might hurt him) ;

c) long-term observation to get to know the child better (growth and behaviour) and to recognize anomalies that may show up.

In the group :

a) observing the child's behaviour in the group context ;

b) observing the group (this allows the educator to evaluate suitability of a proposed activity, whether it arouses general interest, or simply when to stop).

WHAT SHOULD BE OBSERVED ?

It is advisable to gather the most possible information on the child's physical, sensori-motor, intellectual and socio-emotional aspects, so that his level of development can be evaluated and suitable, stimulating activities planned.

Observation should help to meet the children's immediate and long-range needs, make up for their failings and give them better conditions in which to live, grow and develop.

A) Short-term observation for meeting children's needs

The mother (or substitute) is more or less consciously "tuned in" on the child and watching after his well-being. This is not always easy for the educator in charge of a group ; his tendency is often to focus attention on the activities he plans and their success. He should therefore make sure that the child is in a position to benefit from the proposed activities, for any immediate or impending problem mobilizes the child's forces and prevents him taking an interest in other things. (the educator should talk things over with the parents who can tell him about the child's problems and previous history). A certain number of questions must be put, and the answers sought through observation :

- is the child in good health (is he normally active ? has no pimples ? no fever ?)
- does he seem happy and comfortable ?
- is he, on the contrary, uncomfortable (wet, soiled, dirty...), ill dressed (clothing that is too big, too small, torn, full of holes, dirty), ill shod (shoes untied, too small, on the wrong foot) ?
- is he tired (drooping features, pale, weepy, lack of energy) ?
- is he frightened ?
- is he suffering (migraine, teeth, injuries, cold, heat, hunger) ?
- is he in some danger (incorrect use of an object which might result in hurting him, dangerous games, etc...) ?

B) Long-term observation to evaluate the child's development, make up for failings, detect existing anomalies or handicaps and correct them if possible.

a) Physical and sensori-motor development

- Is the child growing normally (height and weight curve) ?
- Does his outward aspect indicate good health : skin, hair, eyes, smile...
- Is his vision good ? can he distinguish similarities, differences ? does he recognize certain colours, geometrical forms ?
- Does he hear well ? can he follow a rhythm ? can he reproduce it ?
- Does he move around with ease ? how does he walk ? has he a good sense of balance ?
- Does he know how to orient himself in space ?
- Is he aware of his body ? (body and its various parts)
- Does he know which is his left ? his right ? Which hand does he use by preference ?
- Is he handy with tools (scissors, hammer, pencil, paint, brush) ?
- Can he dress himself alone ? can he do up his buttons and laces ?

b) Intellectual (or cognitive) development

- Is the child active ? does he play ? does he spontaneously enter into activities ?
- Do the proposed activities interest the child ?
- Does he understand what he is told ? asked ?
- Is he able to pay attention ? is he persevering or does he quickly abandon an activity ?
- Can he memorize (story, tale, song, etc...) ?
- Can he express himself and communicate ? pronounce correctly ? use the right words ?
- Does he use new words ?
- Does he show imagination ? make up stories, songs ?
- Is he intrigued by symbols and codes (traffic indications, for example ; advertisement boards) ? books ? pictures ?
- Does he understand certain symbols ?
- Does he show the desire to communicate by means other than speech ?

c) Socio-emotional development

- Is the child lively ? reserved ?
- Does he adapt to change ? new situations ?
- Does he communicate with the adult ? strangers ? the children ?
- Is he at ease with children of his own age ? is he a leader ? follower ? authoritarian ?
- Is he independent with regard to other children ? with regard to the adult ?

- Can he assume responsibility ?
- Does he have confidence in himself ?
- Does he control his emotions ?
- Does he respect the others' equipment and productions ?
- Does his behaviour have any special characteristics (thumb-sucking, nail-biting, wetting...) ?

All these observations contribute to better individual understanding of the child, help to place him in the present time context, and to evaluate his development. Certain information is indispensable if the educator is to be able to work with each child as he really is, help to make up for his failings (physical clumsiness or pronunciation difficulties, for example), lead him to progress and compensate for his deficiencies.

Knowing the child very well on an individual level, however, is insufficient if nothing is known about :

- his past :
  - what was his growth pattern until the present ?
  - was he breast fed ?
  - at what age was he weaned ?
  - has he had any serious diseases ?
  - has he been hospitalized ?
  - has he lived through events which have left some mark ?
- his problems :
  - is he handicapped ?
  - is he under special medical supervision (diabetic child, for example)
- his familial and socio-cultural background :
  - location and size of home, number of people per m^2, sanitary facilities
  - is there a mother ? does she live at home ? does she work, at home or outside ? how much times does she spend away from home ?
  - is there a father ? does he live at home ? does he work ? what is his occupation ? does he take care of the child ?
  - what is the parents' educational level ?
  - what is the family economic level ?
  - are there sisters and brothers ? how many ? all living ? do they live at home ? how old are they ? what do they do (attend school, go to work,...)
  - what is the child's rank in the family ?
  - who else lives in the household ? what do they do ?
  - who, at home takes care of the children ?
  - who exercises authority ?

- what is the child's life rhythm within the family : number of meals, meal-times, number of hours of sleep, sleep-time ?
- is the child given household duties ? What are they ?

Not all the adults (parents, grandparents, nurses, teachers) surrounding the child observe the same aspects of his personality and development. Collating all the information makes it possible to understand the totality of the development of the child in a more objective manner and to unify educational messages and action.

TECHNICAL NOTE

HOW TO BUILD A SHORT-TERM PROGRAMME

The activities schedule of a community of small children, be it for a fraction of a day, an entire day or a week, requires advance planning. The idea is not to function on clockwork, but to take the rhythms and needs of children into account in planning a series of activities which will stimulate them in all spheres.

Improvisation over the course of hours or days leaves children of this age insecure, for they have no notion of time. Nor does it enable us to master the situation : some aspects of the child's personality may be constantly sollicited while others are totally neglected. To be profitable it would require an educator with enormous experience and exceptional gifts in numerous fields. This is not desirable and is only possible in a tiny minority of cases.

In planning a series of activities for small children, the daily sequence of attendance must be taken into account (several hours, a half-day, an entire day), along with a period including several daily sequences (a week, two weeks, one month) : this is a short-term programme. Programmes may not be identical from one establishment to another, since many factors come into play. All types of organization are good, provided they take a certain number of factors into account and respect some principles.

1. What factors must be taken into account in the establishment of a short-term programme ?

A) The children

a) their basic needs : food, excretion, rest. Eating, going to the toilet and resting are the fixed points in each sequence. this provides security for the children and helps them to structure time.

The meal or meals should occur at the same time every day : a time linked to the local habits. As a rule : there should be no nibbling all day long ; children should not spend much of the day without eating ; snacks should not be taken too close to the main meals.

Toilet-going times should be set at regular intervals, always at the same time of day (outside of the set times for all children, everyone may naturally go when he/she wishes).

The collective rest time or times (nap, relaxing, slow activities) are defined once and for all. They depend on the times of arrival and departure, as well as on the length of time spent in the establishment. The length of the sleeping period should be in accordance with the biological rhythms of children (1).

Once these fixed points are defined, activities are set up around them. No very intense activity is planned immediately upon awakening or during digestion.

b) their characteristics :

- Children do not have the same rhythm as adults : some very simple activities such as dressing require much time of them. Children tire quickly and have a short attention span. This means that activity periods must be short (20 minutes at most), plus a short period for getting started and cleaning up.
- Children are emotionally vulnerable : they need security and cannot structure time. They therefore need repetition at set times for some activities (meals, arrival and departure activities).

B) The environment

a) the location (buildings and other groups).

Different problems arise, depending on whether there are one or several educators and groups of children, for all must be taken into account in organizing activities. If the rooms resound, as is often the case, a very noisy activity cannot take place along with one requiring concentration and silence. Much thought must be given to the scheduling of activities for groups occupying the same buildings, in order to avoid promiscuity and to take best advantage of the buildings, the space and the material.

b) the climate

The climate, and therefore the seasons, influences the organization of activities : an intense physical activity cannot take place during the hottest time of day.

2. What principles must be respected ?

a) alternation : alternation of free and organized activities, collective and individual experiences, indoor and outdoor action, calm and agitation, physical and intellectual activities, relaxation and effort...

b) respect for all components of chidren's personality : do not sacrifice one aspect for another one (do not prefer the more intellectual activities to the physical activities).

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(1) Cf. "Children in the Tropics" n° 125 - Children and their biological rhythms.

To summarize :

Organization of a sequence :

- Fixed activities and others contribute to the development of all aspect of the child's personality.
- Respect the need for alternation and the restrictions imposed by the children and their environment.

Organization of a short-term programme : juxtaposition of several sequences. When the sequences are short, all of the activities needed for development cannot be implemented, since children have a slow rhythm. Several sequences must then be juxtaposed in order to attain a complete programme.

CONCLUSION

Yes, these children go unrecognized.

Innumerable children between the ages of 2-3 and 5-6 in the developing countries have no access to services or monitoring in the fields of health or education. They usually belong to the most underprivileged families, living under extremely precarious social and economic conditions. These children have multiple needs, and inadequate or inappropriate responses may have substantial negative short and medium-range consequences and undermine their total development. As we have seen, each child is unique and has his/her own pace of development, and each group of children is different. We must therefore use a general portrait of children as a starting point, and learn to understand each individual child and to define the specific features of each group, so as to provide appropriate responses.

This requires that everyone involved - parents, governments, associations and international agencies - implement both research and action programmes.

It is most important to acquire a better understanding of the various aspects of these children's living conditions: health and nutritional status, psychomotor, psychosocial and cognitive development and family context. Longitudinal studies of these aspects should be undertaken, instead of circumscribing investigations to a few case studies, limited in time. It is important that we have an accurate picture of the evolution of problems, particularly since the rate of change is rapid in countries with a galoping urban development. This means that research should be undertaken in order to establish some simple, reliable positive indicators, which may be proposed to grass roots officials and would enable them to monitor the situation.

We must know these children, but we must also know their parents: what are their educational goals? what do they want for their children? what are their hopes?

Perhaps one of the reasons why so many programmes have not lived up to expectations is that parents were not brought to participate in them. If parents have goals for their children, if they are aware of the importance of the role they play, then they will be motivated to implement some day-to-day activities, and to set up programmes or to participate actively in those which exist.

Parents should therefore be helped to discover their children's multiple needs, in order to motivate and stimulate them. What is really needed is a programme to combat resignation. In some communities, actions have been launched on parental initiative: perhaps what is needed is a better knowledge of these, in order to reinforce and support them.

The term "survival" is often used with respect to children from some underprivileged areas. Our aim should not be to attain a subsistence level, but to promote a status for children so that they may not only reach this subsistence level with respect to diet and shelter, but may be helped, loved, respected, educated and accompanied on their first steps in life.

This means that the people in charge must work together: workers in health, social welfare and education should establish linkages, discover and share each other's skills, and unite their efforts for the children's well-being. Why do health centres and paediatric consultations rarely monitor children's psychomotor and cognitive development after the age of one or two years? Is this not an essential action, and one which may induce parental involvement? The Cali experience shows how effective such monitoring may be. Why is health monitoring so sporadic in nursery schools and kindergartens, and health education programmes so rare?

We need to understand children's needs and to observe their evolution, to propose a charter in favour of children, to help countries to develop appropriate social policies, to motivate parents, stimulate and reinforce local initiatives and persuade ourselves that each child is different, that children's needs are multiple and can be met in a great many different ways. This requires that research be undertaken, and that we call on our powers of observation and imagination, and agree to share our work and experience. Our slogan should be to work toward the well-being of the younger generations and above all, to love them.

PRIZE NATHALIE MASSE

In 1976, to keep Dr. Nathalie MASSE's (1), memory alive, a Memorial was created. Out of the funds collected, every year the Nathalie Masse Memorial Committee award an international prize in recognition of a significant work in the field of childhood. Thanks to the generosity of the "ICC friends Association", the amount of this prize in presently set at 50,000F.

This prize, called "International Nathalie Masse Prize/International Children's Centre", aims at rewarding a candidate, who must be under 50 years of age, and who has carried out, either alone or leading a team, a work for deprived children, preferably in a developing country, whatever the field of his activities may be.

Applications must be addressed directly to the Memorial Secretariat, either through an international organization (WHO, UNICEF...), or an official of the ICC (member of the Executive Board, the Scientific Committee, head of department).

Candidates'files (2) must be prepared in three copies, either in French, English or Spanish, they should include:

- the name, date and place of birth, address of the candidate;
- a summary of the candidate's qualifications and works;
- a report outlining activities carried out for deprived children.

Candidates'applications should reach the Memorial Committee Secretariat by the 1st of December, 1987.

A jury, composed of responsibles of ICC and Memorial Committee, will elect the laureate.

The candidate must formally commit himself (herself) to come to Paris on the date fixed for the awarding of the prize which will be held in the presence of the governors and personnel of ICC, the donors, the members of the Memorial Committee, the specialized press as well as diplomatic representatives of the prize-winner's country.

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(1) Dr Nathalie MASSE, who died in 1975, was in charge of the training activities of the International Children's Centre for 18 years. She made an invaluable contribution in improving the condition of children in the world.
(2) Candidates may obtain forms from the Memorial Secretariat.

Founder : Prof. J. SÉNÉCAL
Managing Director : Prof. H. DUPIN
Editor in Chief : Dr. A.-M. MASSE-RAIMBAULT
Imprimerie Rosay, 47, avenue de Paris, 94300 Vincennes - Dépôt légal : 4e trimestre 1987 - N° 401
N° de commission paritaire : AD 1622

— 142 145

NOTICE

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108-109 Primary health care.
110 Family health and birth control.
111 Poliomyelitis.
112 Sex education in traditional life in black Africa.
113 Reflections on a strategy for education for health.
114 Vaccination: organization, technique and evaluation.
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48